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TECHNICAL MANUAL



ORDNANCE MAINTENANCE

SIGHTING SYSTEMS M5 AND M6

22 JULY 1943



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ORDNANCE MAINTENANCE

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WAR DEPARTMENT

Washington, 22 July 1943

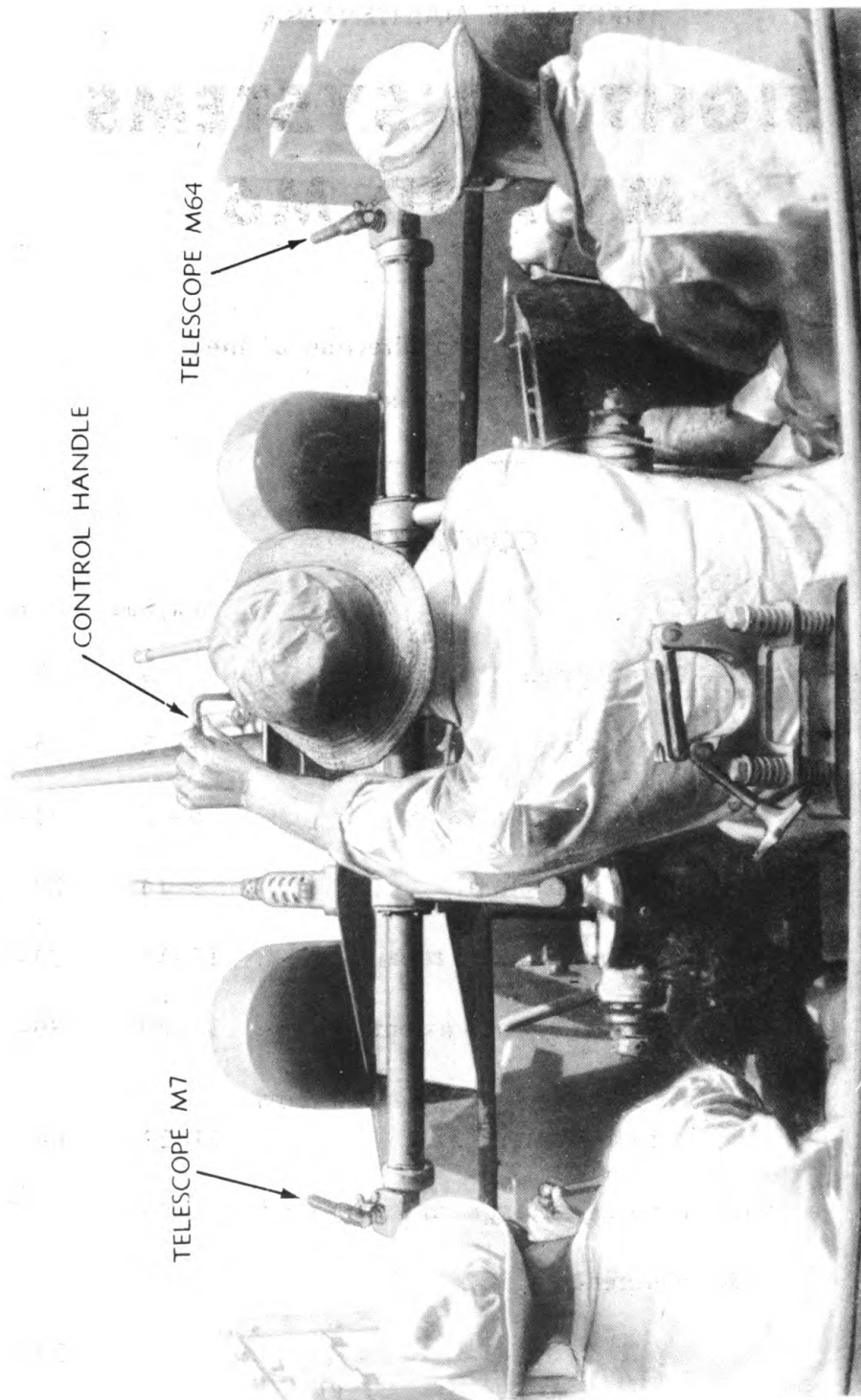
SIGHTING SYSTEMS

M5 AND M6

Prepared under the direction of the
Chief of Ordnance

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Figure 1 — Sighting System M6 in Operation

Section I

INTRODUCTION

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1. SCOPE.

a. This manual is published for the information and guidance of ordnance maintenance personnel. It contains detailed instructions for inspection, disassembly, assembly, maintenance, and repair of the Sighting Systems M5 and M6. These instructions are supplementary to those in Field Manuals and Technical Manuals prepared for the using arms. Additional descriptive matter and illustrations are included to aid in providing a complete working knowledge of the materiel.

2. CHARACTERISTICS.

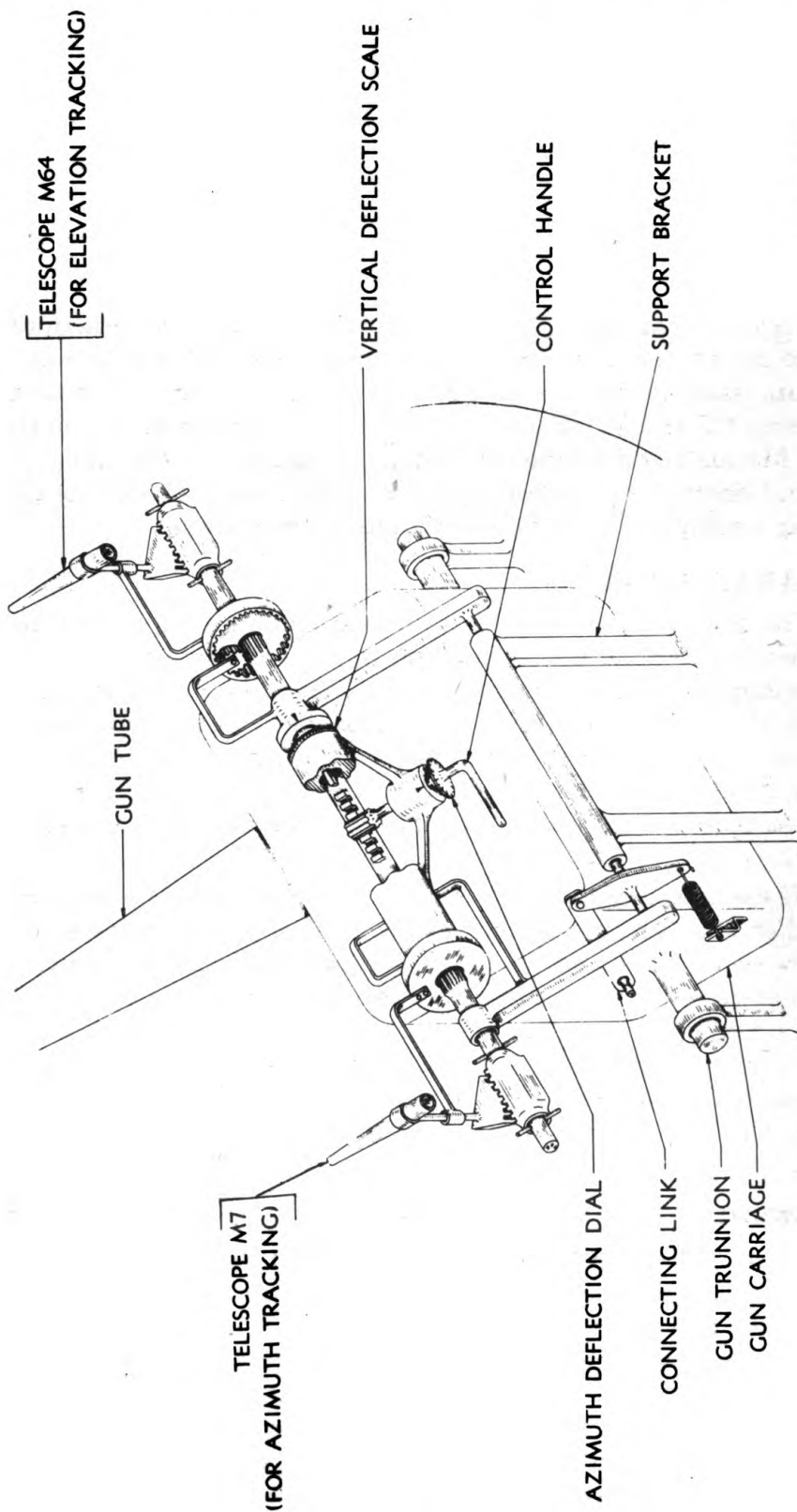
a. The Sighting System M5 is an auxiliary sighting system to be used when the remote control system of the regular sighting system becomes inoperative or in situations where the necessity for going into action on short notice precludes the use of the remote control system. The Sighting System M5 is for use on the 37-mm Antiaircraft Gun Carriage M3A1. The Sighting System M6 (fig. 1) is for use on the 37-mm Antiaircraft Multiple Gun Motor Carriage M15 or M15E1, for which no remote control system is provided.

b. These sighting systems consist basically of two telescopes mounted on the right and left sides above the operators' seats and connected by means of linkages to follow the gun in azimuth and elevation. One of these telescopes is used for elevation tracking and the other for azimuth tracking. They are conveniently located for the trackers at all possible angles of elevation. A control handle, located between the two telescopes, is used to set the instruments in lateral and vertical deflections. A schematic diagram of these sighting systems is shown in figure 2.

3. DIFFERENCES AMONG MODELS.

a. Sighting Systems M5 and M6 are generally similar and in many details identical. Both systems utilize two telescopes, one for azimuth tracking and the other for elevation tracking. The Telescope M7 is used for azimuth and the Telescope M64 is used for elevation in both sighting systems. These telescopes are identical with the exception of the reticle pattern (fig. 10). The mechanisms for setting in the deflections are the same in both systems. The telescope holders on the Sighting System M5 are located farther apart and lower on the gun carriage with respect to the gun base than on the Sighting System M6.

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6



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Figure 2 — Sighting System M5 or M6 — Schematic Diagram

Section II

DESCRIPTION

	Paragraph
Sighting system M5	4
Sighting system M6	5

4. SIGHTING SYSTEM M5.

a. This sighting system (figs. 3 to 6, inclusive) consists basically of a left and a right telescope holder with deflection mechanisms, a body assembly, right and left supporting arms with attaching brackets, and two telescopes.

(1) LEFT TELESCOPE HOLDER WITH ASSOCIATED PARTS.

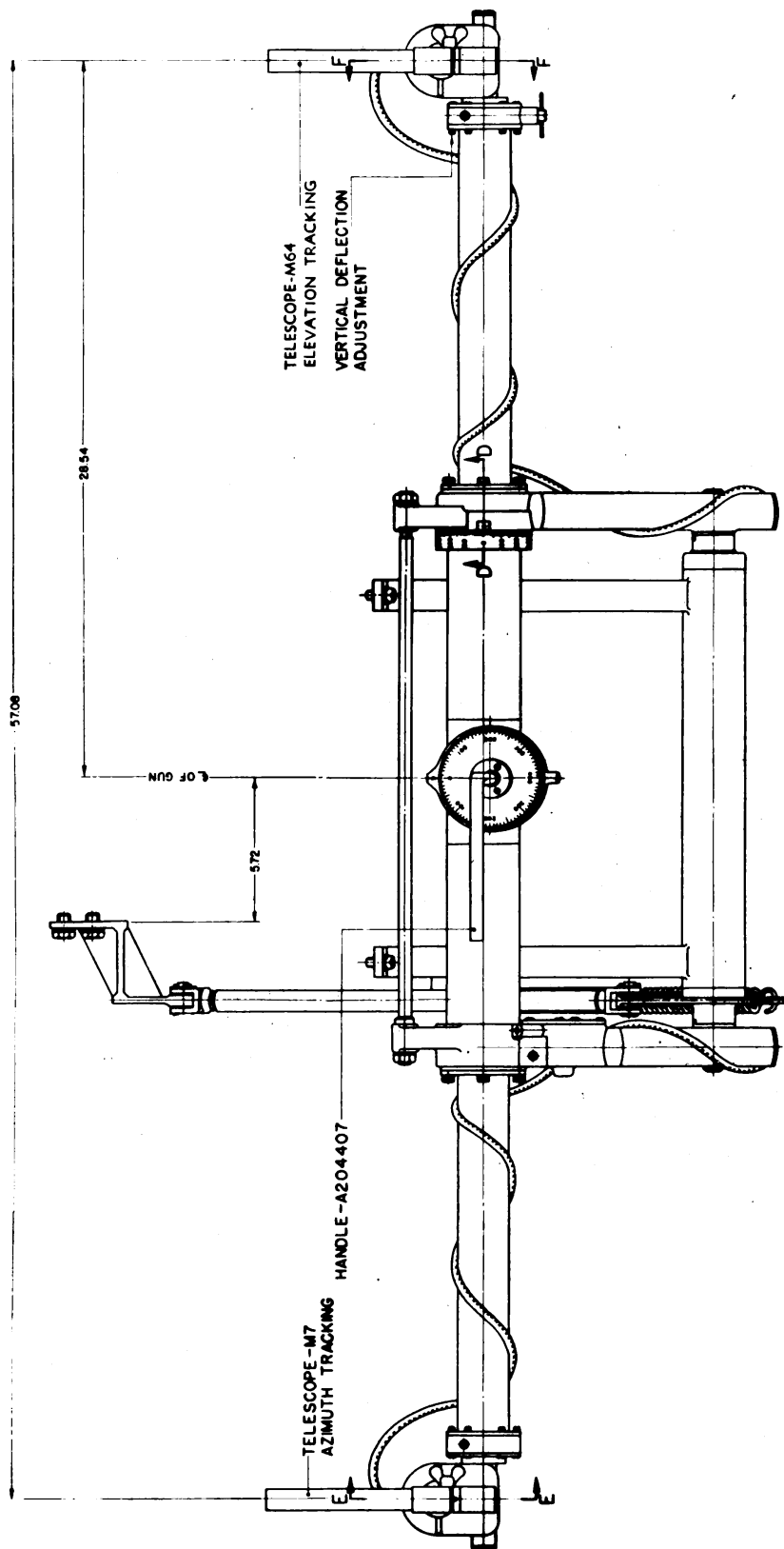
(a) The left (or azimuth) telescope holder B177288 (sec. E-E, fig. 6) is fastened to the gear segment B177291 located in the gear segment rack housing assembly C80753. To the lower end of the telescope holder shaft is attached an adjusting worm housing B174924. An adjusting worm A48433 and an associated locking screw are provided in this housing. Rotation of this adjusting worm permits a movement of the telescope holder with respect to the gear segment to be used when alining the telescope with the gun. The upper part of the holder has a clamping screw A39623 for securely holding the telescope in position. A projection is provided on top of the holder to fit into a groove cut into the telescope. This provision insures accurate positioning of the telescope in the holder. The socket assembly B136897 fits into the holder below the telescope. This socket is used in conjunction with the lighting device for illumination of the telescope reticle.

(b) Lateral (azimuth) motion is imparted to the telescope holder by lateral movement of the pinion shaft B177289 (fig. 5). Rotation of this shaft rotates the gears A184914 and C80742B of the elevating mechanism. Since the gear segment and rack housing is attached to the latter gear, rotation of the pinion shaft will produce a movement of the telescope holder in a vertical plane. The pinion shaft is splined to the central shaft B177278 which is actuated by the control handle of the sighting system.

(2) RIGHT TELESCOPE HOLDER WITH ASSOCIATED PARTS.

(a) The right telescope holder B177287 is fastened to the gear segment B177292 located in the gear segment rack housing assembly C80752 (sec. F-F, fig. 6). A clamping screw, provided on the upper part of the telescope holder, serves to hold the telescope securely in position. The socket assembly B136897 fits into a hole in the holder below the telescope. This socket is used in conjunction with the lighting device for illumination of the telescope reticle. A projection is provided on the side of the holder to fit into a groove cut into the telescope for accurately positioning the telescope in the holder.

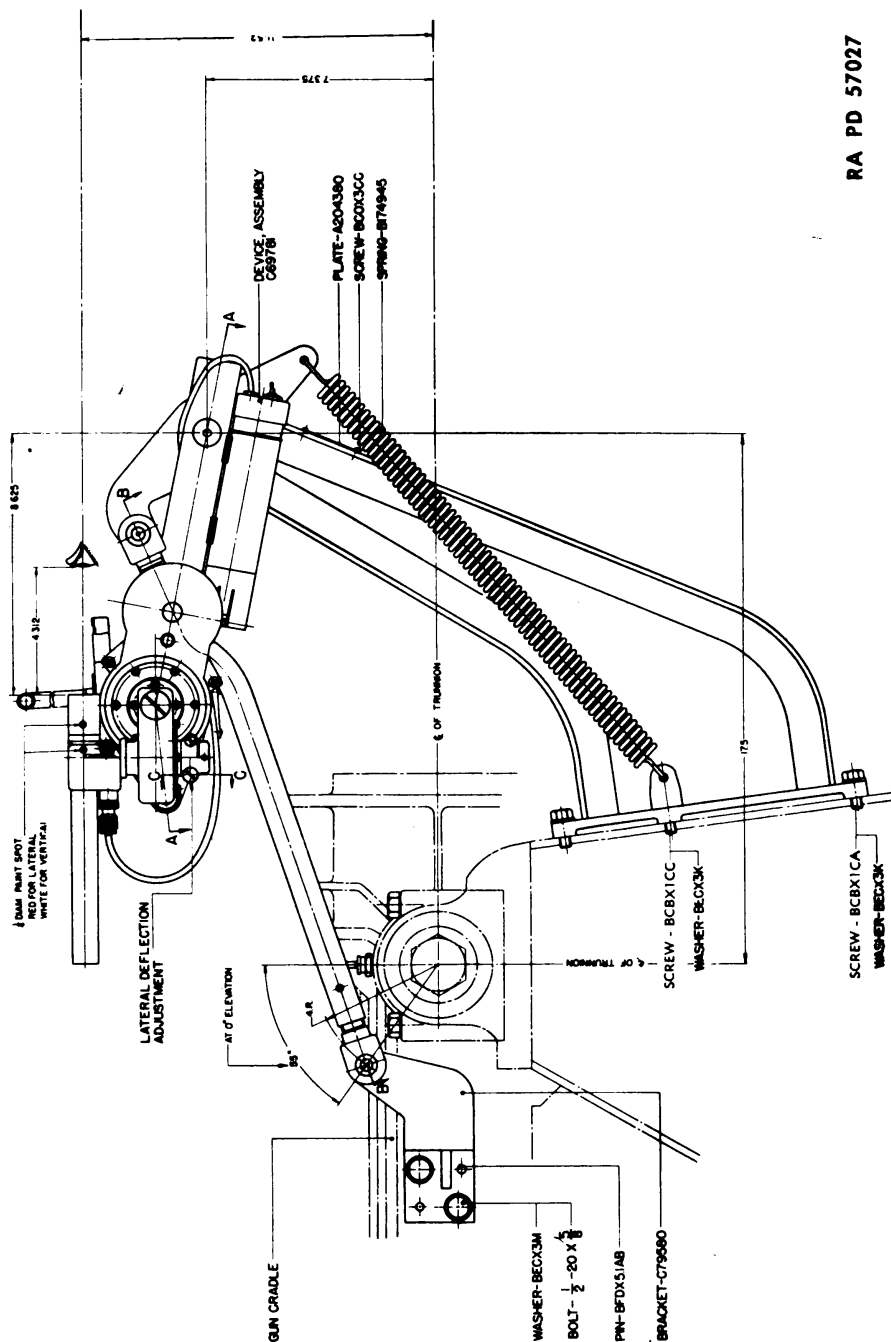
ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6



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Figure 3 — Sighting System M5 — Assembled View

DESCRIPTION



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DESCRIPTION

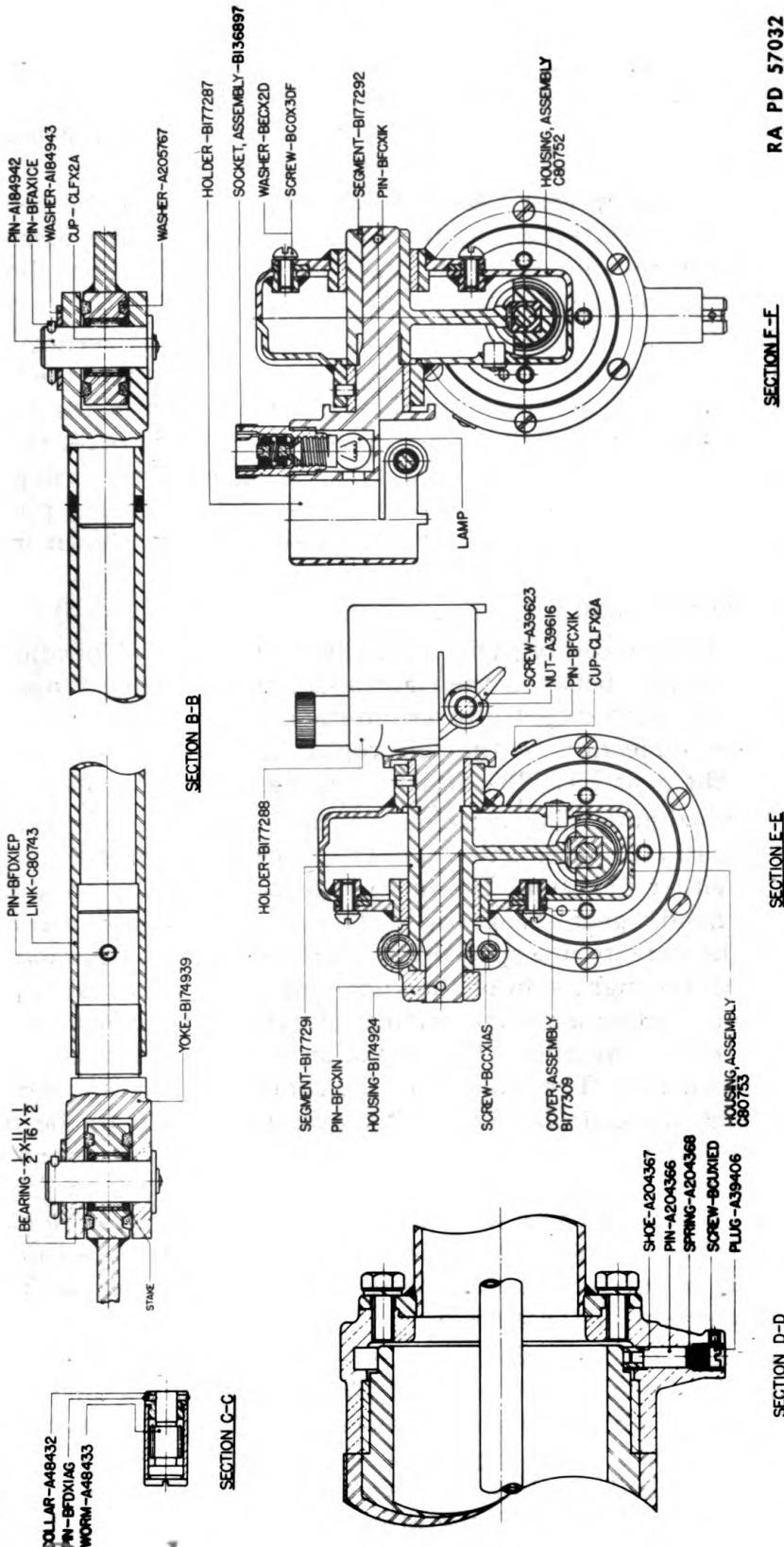


Figure 6 — Sighting System M5 — Sections B-B to F-F, Inclusive (Locations of Section Planes Are Shown in Figures 3 and 4)

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6

(b) Lateral (azimuth) motion is imparted to the telescope holder by the lateral movement of the pinion shaft rack A204381. Rotation of the pinion shaft rotates the gears A184914 and C80742A. Since the gear segment and rack housing assembly C80752 is attached to the latter gear, rotation of the pinion shaft produces a movement of the telescope holder in the vertical plane.

(c) The elevating gear C80742A (fig. 4) rotates in the bearing B177286 which is attached to the housing support tube assembly B177313. Elongated holes in the right flange of this tube allow a vertical adjustment to be made.

(d) In the first six sighting systems manufactured, a vertical zero deflection locking plunger assembly B177290 is provided on the lower part of the elevating gear bearing. This plunger, when in the locked position, engages with a hole in the elevating gear C80742A to hold the gear stationary. The elevating gear is locked when using the sighting system on land or water-borne targets. The locking plunger is not used in later sighting systems, even though it is shown in the illustrations.

(3) BODY ASSEMBLY.

(a) The body assembly (fig. 7) occupies the central position on the sighting system between the right and left supporting arms. The deflection shaft, located centrally within the tube, transmits the lateral and elevation deflection to the telescopes. The teeth on this shaft engage with the gear B177281 attached to the control handle.

(b) The azimuth dial, attached to the control handle gear, is graduated in 10-mil increments numbered every 100 mils from 0 to 400 mils in either direction. The index is attached to the body tube. The control handle gear engages with the gear of the detent assembly B177276. The detents are spaced for 5-mil steps. The elevation dial is attached to the right side of the tube assembly. This dial is graduated in 10-mil increments and numbered every 100 mils from 0 to 400 mils in either direction. The elevation index is attached to the right supporting arm. The left end of the control shaft is splined and passes through the gear B177275. This gear is fastened to the body assembly so that any rotational movement of the body is transmitted to the control shaft. A detent mechanism is also provided for the elevating mechanism. These detents are spaced for every 5-mil elevation of the telescopes. A brake shoe arrangement is provided on the elevation and azimuth deflection mechanisms to insure a smooth and uniform movement of these parts.

(4) **RIGHT AND LEFT SUPPORTING ARMS WITH BRACKETS.** The supporting arms are attached together by means of the shaft C79588 (fig. 4) and pivot about the bracket assembly B177314. This bracket assembly is attached to the top carriage of the gun. Near one end of the shaft is attached the link arm. One end of the link C80743 is attached to the link arm, and the other end is attached to a bracket

DESCRIPTION

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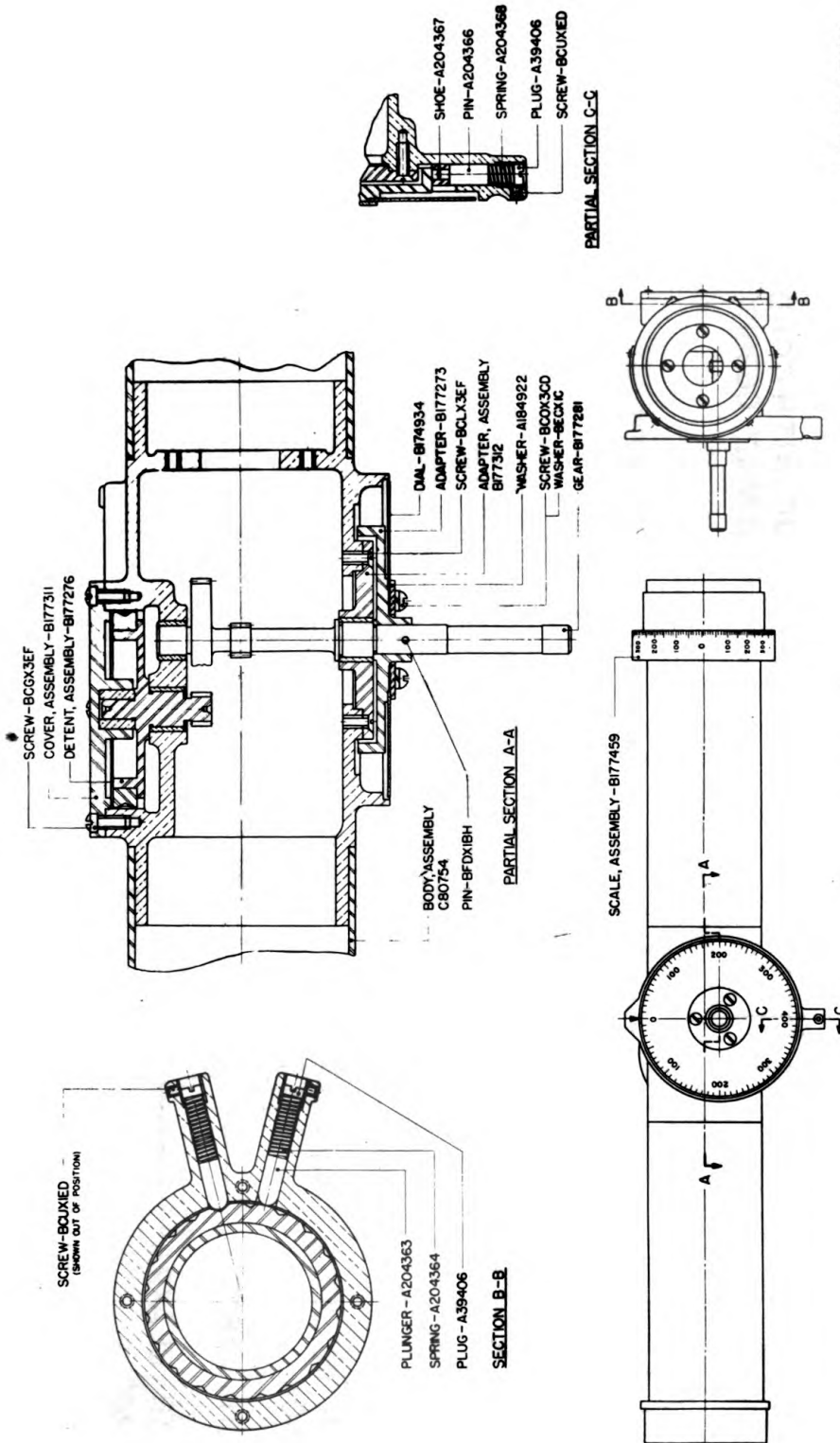


Figure 7 — Sighting System M5 or M6 — Body Assembly

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Figure 9 — Telescope M7 or M64 — Assembled and Sectioned Views

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6

on the gun cradle. As the gun is elevated or depressed, the link actuates the shaft to which the two supporting arms are attached, thus elevating or depressing the supporting arms of the sighting system and the telescopes by means of parallagram action to the same degrees of elevation as the gun. A spring is attached to one end of the link arm and to the gun carriage to counterbalance the weight of the sighting system.

(5) LIGHTING DEVICE.

(a) The lighting equipment consists of two complete units, one for each telescope. Each unit consists of the lighting device assembly and a socket with lamp assembly.

(b) The lighting device assembly (fig. 8) consists of a battery tube A48771 containing two dry cell flashlight batteries (type BA-30), a toggle switch A48773, and a plug and cord assembly C69619. The flexible cord of each unit is wrapped around the support arm to prevent the cord from becoming entangled when operating the sighting system.

(c) The socket assembly from each lighting device fits into an opening on the telescope holder. The light from the lamp passes through the window of the telescope, thus illuminating the reticle. The socket can be unscrewed whenever the replacement of a lamp is necessary.

(6) ACCESSORY EQUIPMENT.

(a) The accessory equipment includes a breech bore sight, handle, muzzle bore sight assembly, and a packing chest for the telescopes. The breech and muzzle bore sights are of regulation type; hence no description is given.

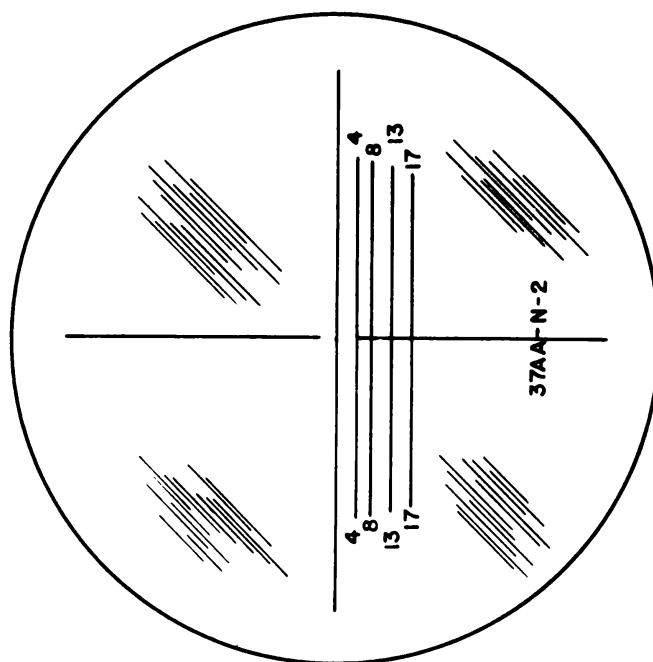
(b) The packing chest (fig. 37) is a rectangular shaped box with padded compartments for two telescopes. The arrangement is such that when the lid of the chest is closed, the telescopes are firmly held in position. A padlock is provided with each chest.

(7) **TELESCOPES M7 AND M64.** The Telescope M7 is used for azimuth tracking and the Telescope M64 is used for elevation tracking on this sighting system. These telescopes are identical with the exception of the reticle. Telescope M7 or M64 (fig. 9) is a one-power instrument having a field of view of 11 degrees and an exit pupil diameter of 0.6 inch. This instrument consists of a cylindrical shaped tube with all the optical elements locked in place.

(a) The objective assembly contains the objective which is retained in the objective cell by retaining rings and locking screws.

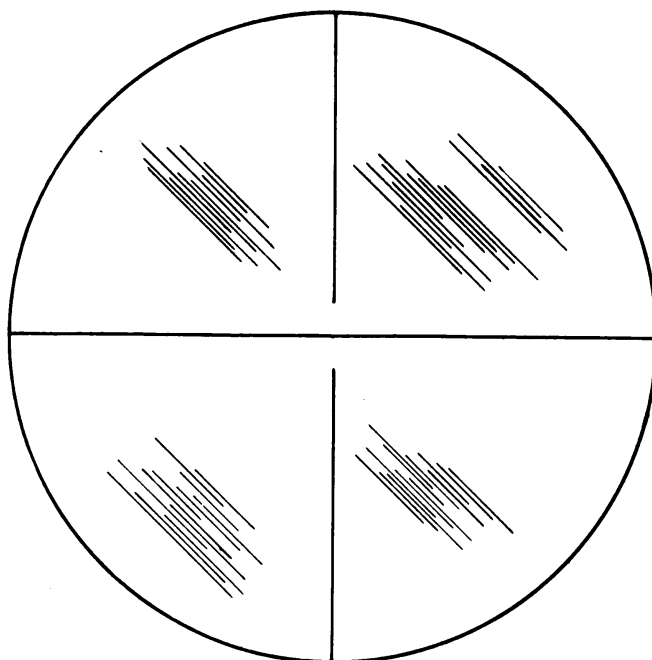
(b) The erector assembly consists of two identical erecting lenses A48236 retained and locked in position by locking screws. The erector lens cell is screwed into the front end of the erector and reticle assembly. The reticle sits on a shoulder and is held in place by ring A48243.

DESCRIPTION



TELESCOPE M64
(ELEVATION)

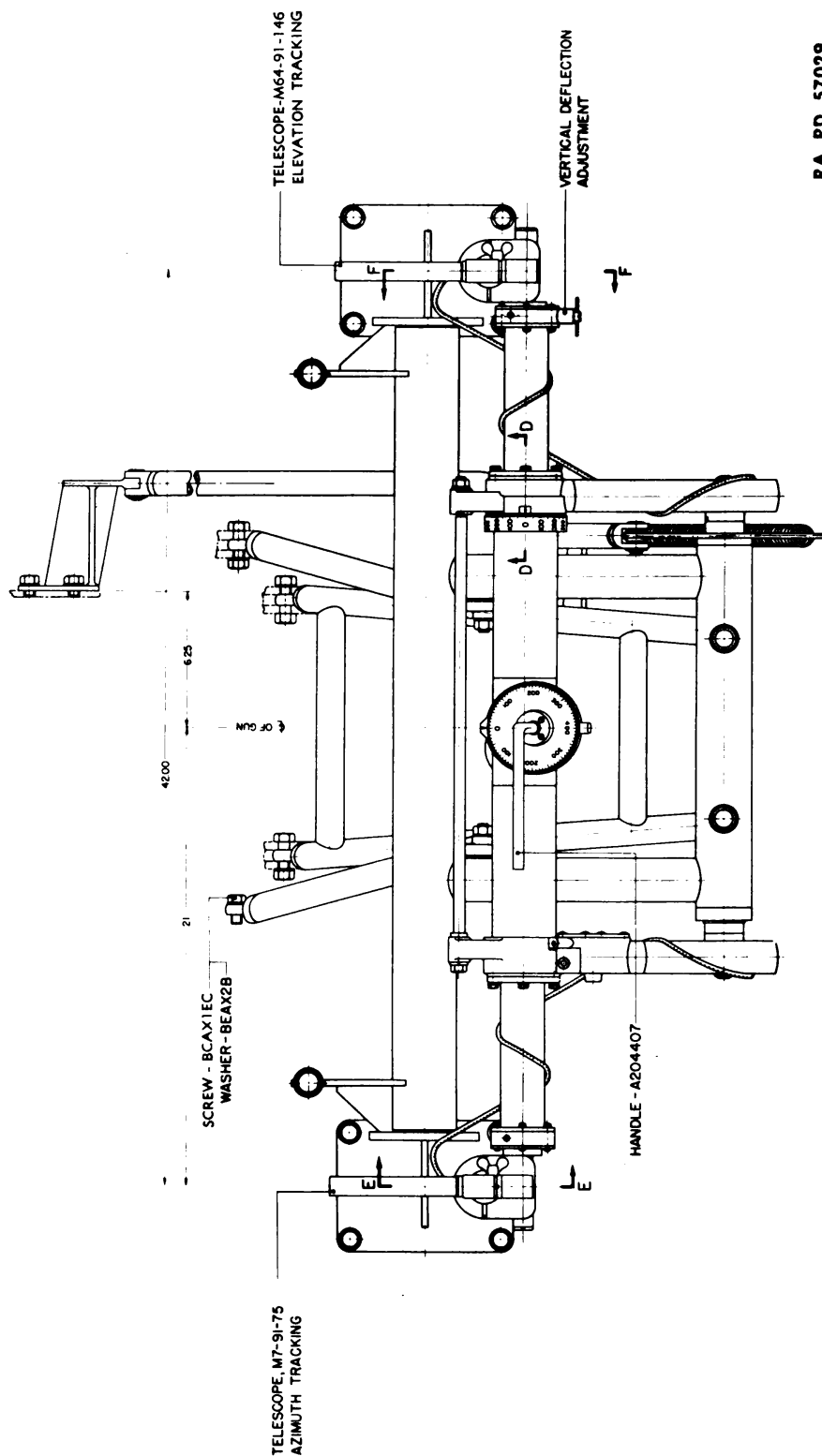
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TELESCOPE M7
(AZIMUTH)

Figure 10 — Reticle Patterns

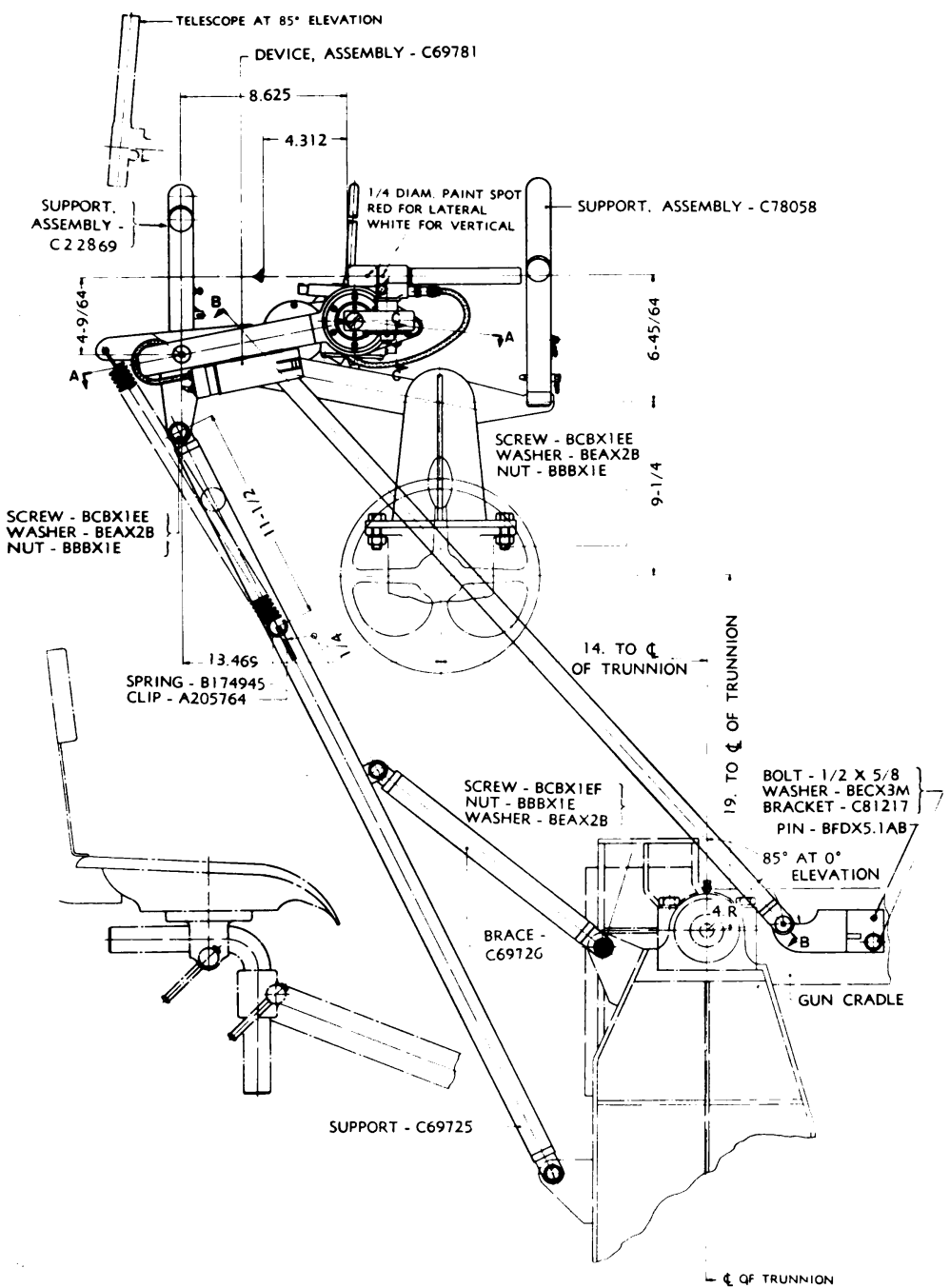
ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6



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Figure 11 — Sighting System M6 — Assembled View

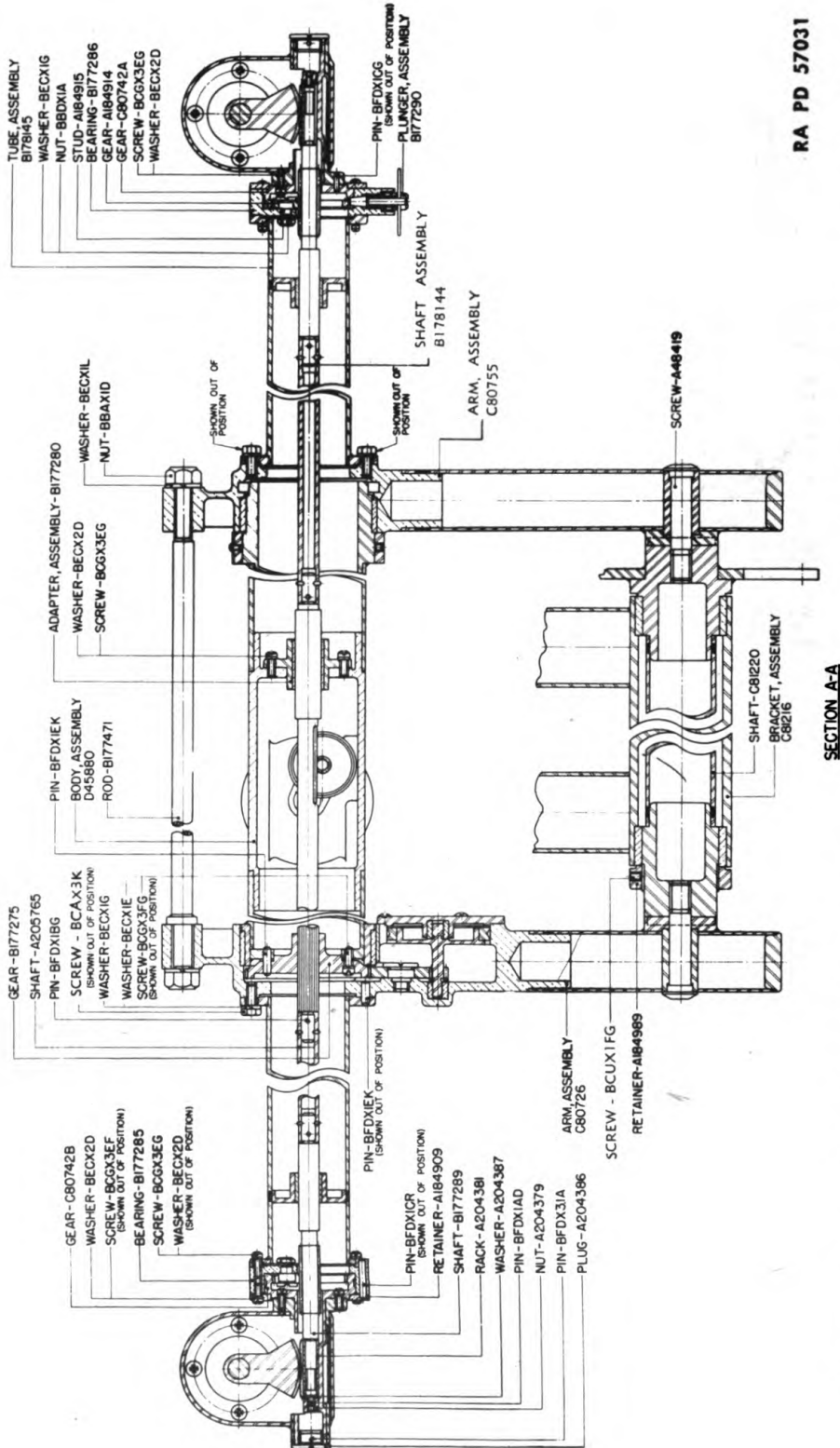
DESCRIPTION



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Figure 12 — Sighting System M6 — Right Side View

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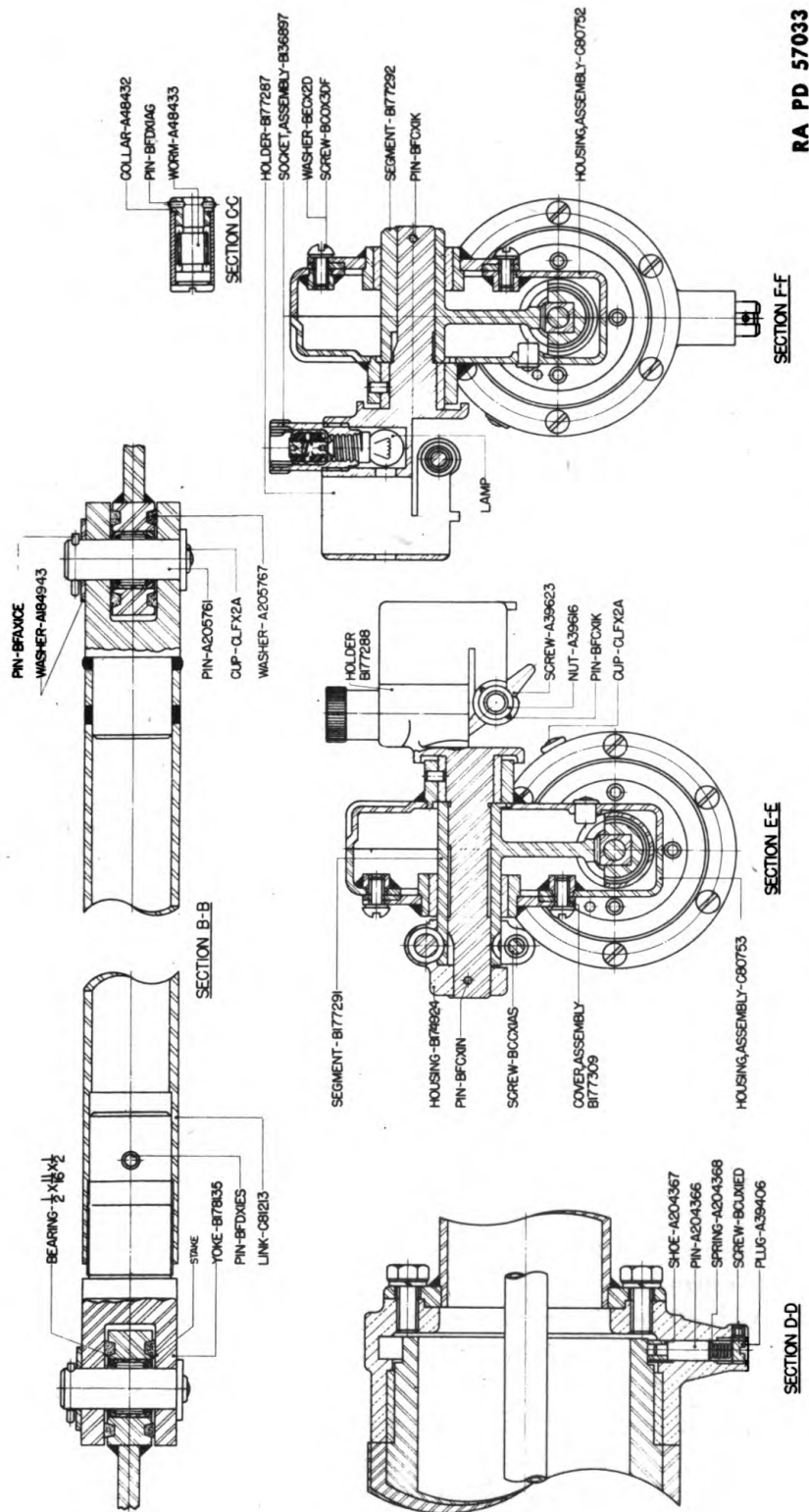


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SECTION A-A

Figure 13 — Sighting System M6 — Section A-A (Location of Section Plane Is Shown in Figure 12)

DESCRIPTION



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Figure 14 — Sighting System M6 — Sections B-B to F-F, Inclusive (Locations of Section Planes Are Shown in Figures 11 and 12)

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6

(c) The eyepiece assembly consists of a field lens A48235 and eyelens (identical parts) A48235 retained in the cell B137233. The cell is screwed onto the end of the telescope tube and is locked in place by a setscrew.

(d) The reticle A48018 of the Telescope M7 has a vertical line and a broken horizontal line etched on it. The reticle C80936 of the Telescope M64 has a vertical line broken at the horizontal centerline and a series of horizontal range lines indicating from 0 to 1,700 yards range. A locating slot is provided on the telescope tube, and a locating lug is provided in each telescope holder to insure proper positioning of the reticle lines when assembling. The reticle patterns are shown in figure 10.

(e) Two windows A35616, 90 degrees apart, are contained in the telescope tube for illumination of the reticle. Two windows are necessary because the same telescope tube is used for both telescope models, and because the azimuth and elevation telescopes are differently positioned in their holders.

5. SIGHTING SYSTEM M6.

a. This Sighting System M6 (figs. 11 to 14, inclusive) is similar to the Sighting System M5 and in many details identical. The description given for the Sighting System M5 will, therefore, be applicable generally to the Sighting System M6 also. The lighting devices for this sighting system are the same as for the Sighting System M5.

b. The telescopes on the Sighting System M5 are spaced farther apart and lower on the gun carriage with respect to the gun base than on the Sighting System M6. To accomplish this, the supporting members and brackets are of different dimensions. The Telescope M64 is used for elevation tracking and the Telescope M7 is used for azimuth tracking on the Sighting System M6. These telescopes are identical except for the reticle pattern. For a description of this telescope, see paragraph 4 a (7).

c. The accessory equipment furnished with this sighting system includes the same items as are given in paragraph 4 a (6) for the Sighting System M5; in addition a front paulin support assembly C78058 and a rear paulin support assembly C82269 (fig. 12) are included. These supports are attached to the upper part of the sighting system by means of pins. Provision is made for readily detaching these supports by extracting the attaching pins. The paulin of the gun (not shown) is placed on these supports when the gun is not being used.

Section III

CARE AND PRESERVATION

	Paragraph
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General precautions	7
Care of optical parts	8

6. CLEANING AND PRESERVING MATERIALS.

- a. The following lubricants are to be used with this materiel:

GREASE, lubricating, special (where grease is required)	OIL, lubricating, for aircraft instruments and machine guns (where oil is required)
--	---

b. The internal mechanisms of the sighting system are lubricated at assembly by the manufacturer and thereafter should require lubrication only at very long intervals, and then by trained ordnance personnel. Only the lubricants specified above should be used.

c. Extreme care should be taken not to overlubricate the mechanisms. Excessive lubrication of certain parts may be as damaging as the absence of lubricant.

d. The following materials are to be used for cleaning optical parts.

ALCOHOL, ethyl, grade 1	BULB, air
BRUSH, artist, camel's-hair, rd.	CLOTH, wiping, cotton
BRUSH, sash-tool, oval	PAPER, lens, tissue
	SOAP, liquid, lens cleaning

7. GENERAL PRECAUTIONS.

a. The sighting system was designed to withstand field usage, and with ordinary care it will be serviceable for a long time but it should not be subjected to unnecessary rough handling or abuse.

b. The telescopes should be removed from their holders and placed in their packing chests when they are not being used.

c. Remove the dry cells from the battery tube when the equipment is not being used. Exhausted cells left in the tube will swell, make removal difficult, and may damage the battery tube.

d. Wipe all dust and grease from the lighting wires and the switch of the lighting device.

e. See that the telescopes are correctly positioned into their holders and the clamping screws firmly tightened. The telescopes have grooves for fitting into a projection on the telescope holder.

f. All external screws should be kept tight at all times.

g. Stops are provided limiting the lateral motion of the deflection mechanism. No attempt should be made to operate beyond these stops as damage to the deflection mechanism may result.

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h. Avoid placing undue strain on supporting members and connecting links. If this precaution is not observed, sprung parts and misalignment will result. The telescopes are built to withstand the maximum amount of abuse under field conditions. However, they should always be handled with the care due precision optical instruments.

i. Remove dust and dirt from the telescope by wiping all metal components with a clean wiping cloth. Any moisture on the telescope tube should be immediately removed in a like manner.

j. Care must be exercised to prevent damaging the locating groove on the telescope. Always wipe dust and grit from the locating surfaces and groove before assembling the telescope to the sighting system.

k. Sighting systems provided with covers and cover supports should be kept covered when they are not being used.

8. CARE OF OPTICAL PARTS.

a. Do not touch or attempt to wipe lenses or windows with the fingers or an oily cloth.

b. Remove dust from optical surfaces with a **BRUSH**, artist, camel's-hair, or a piece of **PAPER**, lens, tissue.

c. To remove oil or grease from the optical parts, apply **ALCOHOL**, ethyl, or **SOAP**, liquid, lens cleaning, with a tuft of clean **PAPER**, lens, tissue. If soap is used, rinse with fresh water at normal or room temperature. Wipe clean and dry with **PAPER**, lens, tissue. If alcohol is not available, breathe heavily on the optical part to moisten it and wipe dry as directed above. Repeat the operation until the surface is clean. Remove wet sand by rinsing the glass surfaces with water and drying them with **PAPER**, lens, tissue. Be careful not to scratch the lens during this operation.

d. Care should be exercised when cleaning compound lenses that no alcohol or soap comes in contact with the cemented edges. If this precaution is not observed, deterioration of the lens cement may result.

e. Do not use the same piece of **PAPER**, lens, tissue, twice. Keep several folds of paper between the fingertips and the optical components being cleaned. Rub gently to prevent damaging the polished surface. A **BRUSH**, artist, camel's-hair, may be used to remove lint.

f. Polishing liquids, pastes, or abrasives are not to be used for polishing lenses and windows.

g. Moisture may condense on the optical elements when the temperature of the instruments is below that of the surrounding air. This moisture may be removed by placing the instrument in a warm place. Heat from strongly concentrated sources should never be applied directly as it may cause unequal expansion of parts with possible breakage of the closely fitted lenses or inaccuracies in observation.

Section IV

BASIC INSPECTION

	Paragraph
General	9
Inspection requirements of the materiel	10
Tools and facilities necessary for inspection	11
Tolerances	12
Basic inspection	13
Action to be taken	14

9. GENERAL.

a. Inspection is for the purpose of determining the condition of the materiel, whether repairs or adjustments are required, and the remedies necessary to insure serviceability and proper functioning.

b. The purpose of the basic inspection is to determine the condition of the materiel and locate basic faults. As a result of this inspection, proper disposition of the materiel can be made and the necessary action taken or recommended. Inspection forms (O.O.F. 7228 and O.O.F. 7229) are provided for recording the results of the inspection. Form O.O.F. 7229 is shown on figure 15. Form O.O.F. 7228 is the same as O.O.F. 7229 except that it is not ruled. Instructions concerning the entries to be made are printed on the back of the form.

c. The detailed inspection is performed by the instrument repairman. The purpose of this inspection is to determine the specific repairs required to put the materiel in a serviceable condition. The inspection procedure may vary with each piece of materiel, depending upon the faults indicated by the basic inspection. Inspection forms and methods used in connection with the basic inspection are described in TM 9-2602, Instruction Guide: The Instrument Repairman.

d. Inspection on this equipment can be performed when the sighting system is either on the gun carriage or resting firmly on a suitable support. In either case, it is essential that the sighting system should be kept accurately leveled during the inspection procedure. Specific instructions are given with those operations that require that the sighting system be attached to the gun carriage.

10. INSPECTION REQUIREMENTS OF THE MATERIEL.

a. Mechanical.

- (1) Functioning of elevation deflection mechanism.
- (2) Functioning of lateral deflection mechanism.
- (3) Functioning of lighting devices.
- (4) Alinement of telescopes with gun and with elevation and lateral deflection indexes.
- (5) Functioning of telescope clamping device.
- (6) Deviation of vertical and horizontal travel of line of sight.

b. **Functioning of Sighting System.** In order for the sighting system to function, it must be installed on the gun carriage so that when

[illegible]

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the vertical and lateral deflection scales are set to zero, the lines of sight of telescopes shall be parallel to the bore of the 37-mm gun and shall remain parallel within ± 2.5 mils at any position of the gun.

c. Optical Parts.

- (1) Parallax.
- (2) Field of view.
- (3) Position of reticle lines.

BASIC INSPECTION

11. TOOLS AND FACILITIES NECESSARY FOR INSPECTION.

a. An instrument repair kit, containing common tools and supplies for instrument inspection and repair, replaces kits previously issued as KIT, repair, optical, for field artillery, and KIT, repair, optical, for harbor defense. Most of the items in the kit, such as screwdrivers, etc., require no description as their uses are self-explanatory. The collimating telescope which is furnished with the kit is a small prefocused telescope of cylindrical shape. It is used for inspecting the optics of the telescope and setting up test fixtures. Optical adjustments can be made more accurately with the collimating telescope than with the unaided eye. The collimating telescope not only makes it easier to "see" the adjustment but also eliminates possible error introduced by the repairman's eye. The collimating telescope does not require adjustment in use and must not be disassembled in the field.

b. In addition to the above-mentioned tools, the following will be necessary to carry out the inspection:

BLOCK, V- , for collimating	WORKBENCH , sturdy, af-
telescope	fording clear vision to the
LEVEL , sensitive spirit	front

12. TOLERANCES.

a. Tolerances or allowable errors are specified where necessary to indicate the accuracy of performance of the instrument. In general, an instrument is considered unserviceable if the error in any part exceeds the specified tolerance. However, it must be realized that this specified tolerance is intended to serve mainly as a guide for the inspector, and must be supplemented by good judgment on the part of the inspector. These tolerances do not necessarily mean that the instrument repairman should not attempt to reduce the errors to lower limits if time and conditions permit.

13. BASIC INSPECTION.

a. **General.** Examine the materiel for completeness, general appearance, condition of paint, and for broken, bent, and missing parts. Record the serial numbers of the telescopes and of the sighting system.

b. **Elevation Deflection Mechanism.** By means of the control handle, set maximum deflections in either direction. Note whether the detents operate properly every 5 mils on the elevation scale. A faint click should be heard and a vibration should be felt on the handle as the detent plunger snaps into its recess. If any binding or undue looseness is experienced, a replacement or adjustment of the wearing parts is necessary.

c. **Lateral Deflection Mechanism.** By means of the control handle, set the maximum lateral deflection in each direction until the stops are reached. This operation should be smooth without bind-

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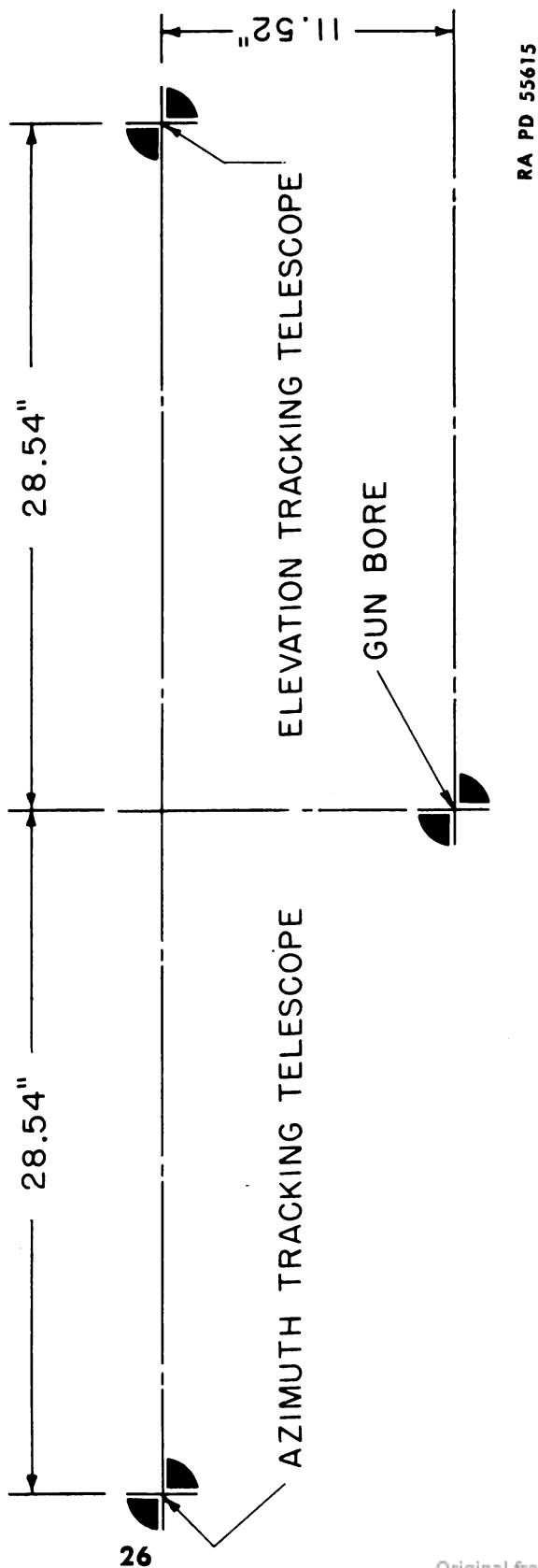
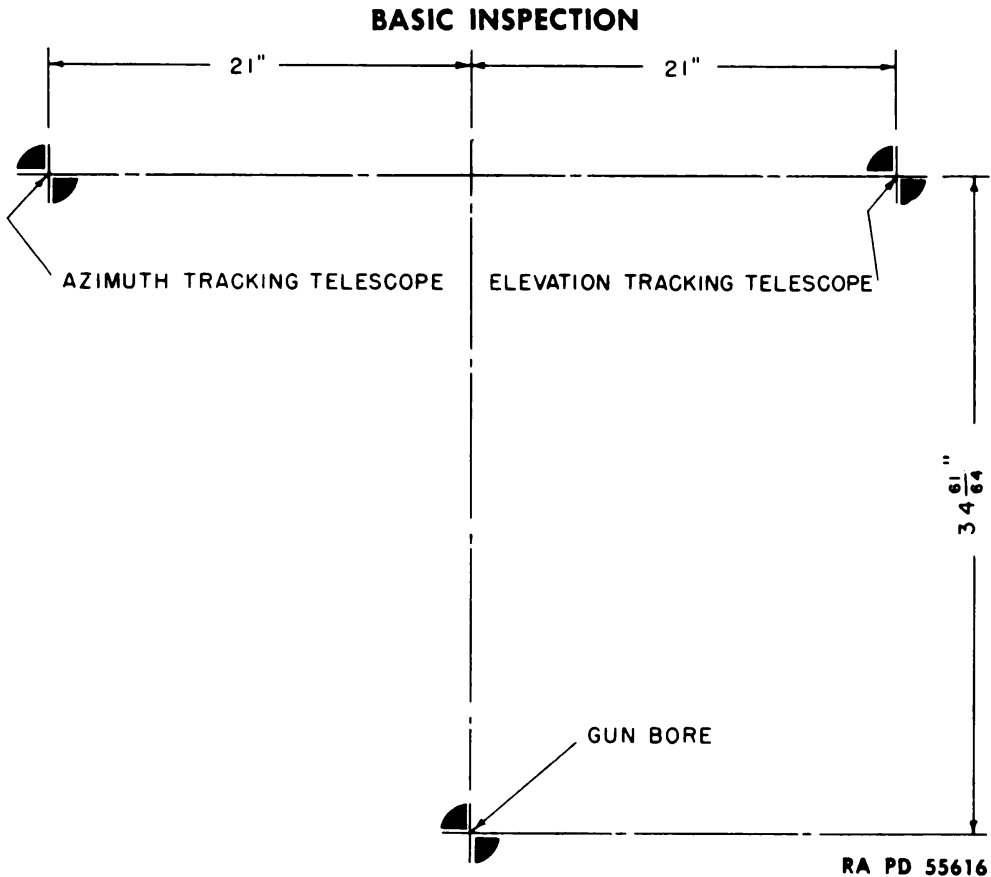


Figure 16 — Sighting System M5 — Dimensions for Testing Target Used for Alining Gun with Telescopes

RA PD 55615



**Figure 17 — Sighting System M6 — Dimensions for Testing Target
Used for Alining Gun with Telescopes**

ing or undue looseness. Note whether the detents operate every 5 mils on the lateral deflection dial. A faint click should be heard and a vibration felt on the control handle as the detent plunger snaps into its recess. If any undue looseness or binding is experienced, an adjustment or replacement of the wearing parts is necessary.

d. Lighting Device. Turn the switch to the "ON" position on both lighting devices. Note whether the illumination is adequate for the reticles. If the illumination is insufficient, replacement of battery cells or lamp should be made.

e. Alinement of Telescopes.

(1) Attach the sighting system to the gun carriage. Accurately level the gun carriage. To level the Sighting System M6 on the Multiple Gun Motor Carriage M15, it will be necessary to maneuver the vehicle to obtain a level position as checked by the gunner's quadrant. It may be necessary to jack one side of the vehicle. By means of the control handle, set the lateral deflection dial and elevation scale so that their indexes are opposite zero. Place the breech bore sight into the bore of the gun. If the breech bore sight is not available, an empty cartridge case, with primer removed, may be placed into the chamber

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of the gun. Stretch crossed cords across the muzzle of the gun, using the horizontal and vertical marks on the muzzle face for proper alinement; affix these cords into position by the strap assembly provided.

(2) Place a level on the gun barrel next to the gun tube extension. By means of the gun elevating crank, level the gun barrel. Place a screen about 5 feet square, approximately 18 feet, in front of the gun. Look through the aperture in the breech bore sight. Center the eye by observing the muzzle tube walls until concentricity of the light circle at the muzzle end is attained. Have an assistant place a mark on the screen where the cord intersection of the bore sight strikes the screen. Draw a vertical and a horizontal line through this mark.

(3) By means of the control handle, set the lateral deflection dial and the elevation scale to indicate zero opposite their respective indexes. Look through the azimuth tracking telescope and have an assistant mark the intersection of the reticle lines on the screen. Draw a horizontal and a vertical line through this mark. Repeat this procedure by using the elevation tracking telescope. The distance between the various lines should be as follows:

Distance Designation	Sighting System M5	Sighting System M6
Horizontal distance (in.) between vertical lines of gun and of either telescope	28.54	21.0
Vertical distance (in.) between horizontal lines of gun and of either telescope	11.52	34.953

NOTE: The above measurements are shown in figures 16 and 17. If the measured distances are different from the distances specified above, an adjustment is necessary.

f. Telescope Clamping Device. Examine the telescope clamping screw. Place a telescope into the holder. Note whether the groove in the telescope properly fits into the protruding part on the telescope holder. Tighten the clamping screw. Note whether the telescope is firmly held in position by the holder.

g. Deviation of Vertical and Horizontal Travel of Line of Sight.

(1) The sighting system must remain attached to the gun carriage if a satisfactory inspection is to be made. Level the gun carriage so that a gunner's quadrant will show level throughout 360-degree rotation.

(2) Place the Telescope M7 in the left telescope holder and clamp in position. Place a plumb line about 18 feet in front of the telescope and in alinement with the geometric axis of the reticle of the telescope. Elevate and depress the telescope by pushing down and lifting up on the control handle (do not rotate the handle) and note

BASIC INSPECTION

whether there is any appreciable deviation between this line and the vertical line of the reticle. If there is a noticeable deviation, an adjustment or replacement of parts is usually necessary. Refer to paragraph 16 m and n.

(3) Elevate or depress the line of sight until it is approximately horizontal. Stretch a cord horizontally about 18 feet in front of the elevation telescope. A horizontal line drawn on a wall will serve as well if this is more convenient. Accurately aline the geometric axis of the elevation telescope reticle with this horizontal line. This can be done by elevating or depressing the line of sight with the control handle.

(4) Rotate the control handle to the right and to the left several hundred mils of the normal position. Look through the elevation telescope at each of these positions. Note whether the geometric axis of the telescope reticle coincides with this horizontal line. If the deviation is appreciable, an adjustment or replacement of parts affected is usually indicated. Refer to paragraph 16 o and p. If desired, the above procedure may be repeated by using the azimuth telescope.

h. Optical Parts.

(1) **PARALLAX.** Observe a vertical target about 100 to 120 yards distant. This target may be a telephone pole or a corner of a building. Aline this target with the vertical reticle line of the telescope. Move the eye slightly to one side. Note whether the object appears to move with respect to the reticle line. If any movement is observed, an adjustment of the optical elements is necessary.

(2) FIELD OF VIEW.

(a) Point the telescope at the sky and note the field of view. The field of view should be sharp and distinct and the reticle should be in sharp focus. If this is not the case, the optical elements are out of focus.

(b) Note any grease, dirt, or moisture on the optical components and defects in the optical glass of the telescope. Note any deterioration of the Canada balsam on the compound lenses. This effect may be like frost crystals or small round disks in the form of numerous concentric circles.

(3) **POSITION OF RETICLE.** With the gun carriage accurately leveled, sight on a telephone pole or a corner of a building. Line up the vertical reticle line of the telescope with the telephone pole or building. Elevate and depress the sighting system and note whether the vertical reticle line follows the object sighted upon. If there is any appreciable deviation, an adjustment is necessary. Deviation of the vertical reticle line would be due to a mechanical defect in the sighting system and not to the positioning of the reticle.

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6**14. ACTION TO BE TAKEN.**

a. Instruments found defective must be repaired or adjusted to render them serviceable. Specific defects noted and action to be taken will be governed by the facilities available. If the facilities of the section do not permit satisfactory accomplishment of the repair or adjustment, the unserviceable materiel will be passed on to a higher maintenance echelon. Replacement items should then be issued to the using arms.

b. If, by the completion of the basic inspection, no faults are indicated, the materiel is determined to be in serviceable condition. If minor faults which can be readily corrected are found, the necessary repairs should be made and the materiel thereby placed in a serviceable condition. As a rule, basic faults do not lend themselves to simple repair or adjustment because the fault must be further localized before the necessary repair can be carried out. If basic faults are found, it will be necessary to complete the inspection procedure in detail, and determine the specific correction necessary to make the materiel serviceable. Detailed inspection and correction procedure is given in section V.

Section V

MAINTENANCE AND REPAIR

	Paragraph
Precautions	15
Sighting systems M5 and M6	16
Telescope M7 or M64	17

15. PRECAUTIONS.

a. In general, adjustments and replacements on this materiel are not to be performed by the using arms. Certain specified adjustments may be performed by the using personnel, when circumstances permit, within the discretion of the pertinent ordnance officer.

b. The extent of disassembly should be kept to a minimum at all times. Usually the repairman determines at the time of his inspection the disassembly necessary for each repair or adjustment job.

c. All optical elements and gears should be carefully marked as they are disassembled to insure correct positioning on reassembly. If parts are not so marked or tagged, considerable difficulty may be experienced in the final adjustment. Optical elements should be carefully cleaned and wrapped in clean PAPER, lens, tissue. Reticles in particular should be handled with extreme care.

d. In the disassembly and assembly of optical elements, extreme care should be exercised that these parts are not broken or damaged in any way. The clearances between the optical elements and associated metal parts are very small; therefore patience should be exercised when disassembling or assembling.

16. SIGHTING SYSTEMS M5 AND M6.

a. **To Inspect the Elevation Deflection Mechanism.** Push down on the control handle (without rotating) (figs. 3 and 11) until the elevation scale index indicates minus 400 mils. Lift up on the handle (without rotating) until the elevation scale index indicates plus 400 mils. The detent plunger should snap into its recess every 5-mil indication on the elevation scale. A faint click should be heard and definite vibration of the control handle should be felt each time this occurs. If, during any part of this procedure, the detents operate improperly or the control handle operates too hard or too loose, an adjustment or replacement of the wearing parts is necessary.

b. **To Correct Improper Functioning of the Elevation Deflection Mechanism.**

(1) Loosen both plug locking screws BCUXIED (fig. 6) and tighten the associated plugs. If necessary, adjust the brake shoe plug A39406 (sec. D-D, fig. 6) in a similar manner. Tighten the plug locking screws. Operate the mechanism to ascertain whether it functions properly over the adjusting range.

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6

(2) If the mechanism does not function properly by following the procedure given above, replacement of the wearing parts is necessary. Loosen both plug locking screws and associated plugs A39406 (figs. 27 and 30). Remove the four cover screws BCGX3EF and remove the cover assembly B177310 from the arm assembly. Extract the detent assembly B177270. Place a serviceable detent assembly in position and replace the cover assembly with associated screws. Remove both plugs A39406 and extract the associated springs A204364. Replace with serviceable springs and tighten the plugs and associated locking screws.

NOTE: It is imperative for proper operation of the sighting system that the detent mechanism function properly over the entire adjusting range otherwise the mechanism will "creep" due to vibration set up by firing of the gun.

(3) If the mechanism still fails to function properly after the procedure given in the preceding subparagraphs has been carried out, replacement of the elevating gear in the left and right telescope holder mechanisms is usually necessary. This requires the complete disassembly and assembly of the left and right elevation gears. For this procedure, see paragraph 19 b to e and j to m.

c. To Inspect the Functioning of the Lateral Deflection Mechanism. Rotate the control handle clockwise until the stop is encountered. Slowly rotate the control handle counterclockwise until the other stop is encountered. The detent plunger should snap into its recess for every 5-mil change in lateral deflection. A faint click should be heard and a vibration of the control handle should be felt each time this occurs. If, during any part of this procedure, the detents operate improperly or the control handle operates too hard or too loose, an adjustment or replacement of the wearing parts is necessary.

d. To Correct Improper Functioning of the Lateral Deflection Mechanism.

(1) Loosen both plug locking screws BCUX1ED and adjust both plugs A39406. Tighten the plug locking screws. See section B-B, figure 7. In a similar manner, adjust the brake shoe plug A39406 (sec. C-C, fig. 7).

(2) Operate the control handle over the entire adjusting range to ascertain whether the mechanism operates properly. If the mechanism does not operate properly, carry out the procedure given in step (3), below.

(3) Loosen both plug locking screws BCUX1ED. Loosen both plugs A39406 (figs. 64, 27 and 30). Remove the four cover screws BCGX3EF and extract the cover assembly B177311 from the body. Slide out the detent assembly B177276. Carefully slide a serviceable detent assembly in position and replace all removed parts in the reverse order of disassembly.

MAINTENANCE AND REPAIR

(4) If the lateral deflection mechanism does not function properly by following the procedure given above, replacement of the rack A204381 and associated gear segment in the right and left gear segment housings is necessary. For this disassembly and assembly procedure, refer to paragraph 19 b to g and j to m.

e. To Inspect the Lighting Devices. Turn the switch on either of the lighting devices to the "ON" position. Note whether the illumination is adequate for the illumination of the telescope reticle. Repeat this procedure on the other lighting device. Failure of the lamp to operate is usually due either to a burned out lamp, faulty electrical connections, or exhausted battery cells.

f. To Replace the Lamp. Disconnect the plug and cord assembly from the socket assembly B136897 (fig. 6). Unscrew the socket assembly from the telescope holder. Remove the electric lamp from the socket. Screw a serviceable lamp into the socket and replace the other parts in the reverse order of disassembly.

g. To Replace the Battery Cells. Slide the battery tube out of the holder on the supporting arm. Unscrew the battery tube A48771 (fig. 8) from the cap B137410. Slide out both battery cells from the tube. Place two serviceable cells in the battery tube. See that the central terminal of each cell points toward the switch end of the lighting device. Attach the battery tube to the cap. Each time battery cells are replaced, it is good practice to examine the connections of the cord. All loose connections should be tightened.

h. To Inspect the Alinement of Telescopes with Gun and with Elevation and Lateral Deflection Indexes.

(1) With the sighting system attached to the gun carriage, accurately level the gun carriage. Place a level on the gun tube next to the tube extension. By means of the gun elevating mechanism, center the bubble in the level. Place a breech bore sight into the breech of the gun. An empty cartridge case, with primer removed, may be used if the breech bore sight is not available. Stretch crossed cords across the muzzle of the gun, using the horizontal and vertical marks on the muzzle face for proper alinement. Affix these cords with the strap assembly provided. Position the testing target about 100 feet in front of the gun so that the target for the gun bore is alined with the bore sights. Position the target so that the horizontal line connecting the elevation tracking telescope target and the azimuth tracking telescope target is level. This can be determined by holding a straight board next to the horizontal line and placing the level on this board. See figures 16 and 17 for the dimensions of the testing targets for both sighting systems.

(2) By means of the control handle, set the zero of the elevation scale and the azimuth dial opposite their respective indexes. Look through the elevation telescope and note whether the horizontal and

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6

vertical reticle lines coincides with the corresponding lines on the testing target. Repeat this observation on the azimuth telescope. If the reticle lines of either one of these telescopes do not coincide with the corresponding lines on the testing target, an adjustment is necessary.

i. To Aline the Elevation Telescope with the Gun.

(1) With the gun and target set up as described in subparagraph h (1), above, rotate the control handle so that the horizontal reticle line of the azimuth telescope is coincident with the horizontal line passing through the geometric axis of the targets for both telescopes. Look through the elevation telescope and note whether the horizontal reticle line for zero range is coincident with the horizontal target line. If the horizontal reticle line of the elevation telescope does not coincide with the horizontal target line, loosen the six housing attaching screws BCGX3EF (fig. 5). Without moving the control handle, carefully rotate the gear segment and rack housing assembly C80752 (fig. 6) until coincidence has been obtained. Tighten the housing attaching screws.

(2) Rotate the control handle until the vertical reticle line of the elevation telescope is coincident with the corresponding line on the testing target. Loosen the azimuth deflection dial attaching screws BCOX3CD (fig. 7). Rotate the dial B174934 without rotating the control handle until the zero indication is opposite its index. Tighten the azimuth dial attaching screws.

(3) If the zero indication of the elevation scale is not opposite its index, loosen both headless screws BCUX1FE (fig. 31) and rotate the scale assembly B177459 until the zero indication is opposite the index. Tighten the headless screws.

j. To Aline the Azimuth Telescope with the Gun.

(1) With the elevation telescope alined as explained in subparagraph i, above, look through the azimuth telescope and note whether the reticle lines coincide with the corresponding lines on the testing target. The horizontal reticle line will coincide with the corresponding line on the testing target if the original adjustments have not been disturbed. To make the vertical line coincide, loosen the adjustment locking screw BCCX1AS (sec. E-E, figs. 6 and 14) and rotate the adjusting worm A48433 until coincidence is obtained. Tighten the locking screw.

(2) If by following the above procedure, it is not possible to aline the telescope with the gun bore, unserviceable and sprung parts are usually indicated and complete disassembly of the instrument for the replacement of the unserviceable parts is usually necessary.

k. To Inspect the Functioning of the Telescope Clamping Device. With the telescope clamping screw loosened, slide the telescope into the holder. Note whether the projection on the telescope holder

MAINTENANCE AND REPAIR

fits properly into the groove on the periphery of the telescope. Tighten the clamping screw and note whether the telescope is firmly held in position.

l. To Adjust the Telescope Clamping Device. By means of a fine file, dress the projection on the telescope holder. Clean out the groove in the telescope and place a few drops of lubricating oil on the clamping screw. Rotate the clamping screw several turns in each direction. If the procedure is carefully followed, the telescope clamping device will function properly.

m. To Inspect for Deviation of Vertical Travel of Line of Sight.

(1) Accurately level the gun carriage. Quadrant should show level through 360 degree rotation. Place a plumb line 18 feet in front of the elevation telescope. Push down or lift up the control handle of the sighting system until the zero indication on the elevation scale is opposite its index. Position this line so that it is coincident with the vertical reticle line passing through the geometric axis of the telescope reticle.

(2) When inspecting the Sighting System M5 on the Gun Carriage M3A1, push down on the control handle (without rotating) until the elevation scale index indicates minus 400 mils (depression). It is not practical to depress the elevation telescope on the Sighting System M6 this amount due to the armor plate on the front of the Multiple Gun Motor Carriage M15 obstructing the field of view, in this case the telescope need be depressed only to the lower limit of vision. In either case, look through the elevation telescope and note whether the geometric axis of the reticle falls on the plumb line. Have an assistant measure the horizontal distance between the plumb line and geometric axis of the reticle. Lift up on the control handle (without rotating) until the elevation scale index indicates plus 400 mils (elevation). Again look through the elevation telescope and measure the horizontal distance between the plumb line and geometric axis of the reticle. These distances should not be over one-eighth inches. If either one of these distances is more than one-eighth inches, sprung or excessively worn parts are usually indicated.

(3) Repeat the foregoing inspection procedure by using the azimuth telescope instead of the elevation telescope.

n. To Correct for Excessive Deviation of the Vertical Line of Sight.

(1) ELEVATION TRACKING TELESCOPE.

(a) Disassemble the gear bearing B177286 and related parts by following the procedure given in paragraph 19 f. Replace all unserviceable or worn parts and assemble in the reverse order of disassembly.

(b) Check the operation by following the procedure given in subparagraph m (1) and (2), above. If the vertical deviation is still excessive, a sprung tube assembly is usually indicated. Disassemble the

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6

right tube assembly by following the procedure given in paragraph 19 h (1) and (2). Replace the tube assembly with a serviceable tube assembly and assemble the parts in the reverse order of disassembly.

(2) AZIMUTH TRACKING TELESCOPE.

(a) Disassemble the gear bearing B177285 as explained in paragraph 19 l. Replace all unserviceable or worn parts and assemble in the reverse order of disassembly.

(b) Check the operation by following the procedure given in subparagraph m (3), above. If the deviation is still excessive, a sprung tube assembly is usually indicated. Disassemble the left tube assembly by following the procedure given in paragraph 19 n (1) and (2). Replace the tube assembly with a serviceable tube assembly and assemble all parts in the reverse order of disassembly.

o. To Inspect for Deviation of Horizontal Travel of Line of Sight.

(1) Accurately level the sighting system. Rotate the control handle until the zero indication on the azimuth dial is opposite its index. Look through the elevation telescope and place a horizontal line on a target 10 feet in front of the telescope. Position this line so that it is coincident with the horizontal reticle line passing through the geometric axis of the reticle.

(2) Rotate the control handle until a left deflection of 400 mils is opposite its index. Have an assistant measure the vertical distance between the horizontal target line and horizontal reticle line. Rotate the control handle until a right deflection indication of 400 mils is opposite its index. Again measure the vertical distance between the horizontal target line and horizontal reticle line. If these distances are more than one-eighth inches and the procedure given in subparagraph i, above, has been correctly carried out, replacement of worn or sprung parts is necessary.

(3) Repeat the above procedure by using the azimuth telescope instead of the elevation telescope.

p. To Correct for Excessive Deviation of Horizontal Travel of Line of Sight.**(1) ELEVATION TELESCOPE.**

(a) Remove the plug and cord assembly from the socket of the telescope holder B177287 (figs. 6 and 14). Remove the telescope by first loosening the telescope clamping screw A39623.

(b) Drive out the holder pin BFCX1K and remove the elevation telescope holder B177287 from the segment.

(c) Place a serviceable telescope holder in position and drive in the holder pin BFCX1K. Assemble all removed parts in the reverse order of disassembly.

(2) AZIMUTH TELESCOPE.

MAINTENANCE AND REPAIR

(a) Remove the plug and cord assembly from the socket of the telescope holder B177288 (figs. 6 and 14). Remove the telescope by first loosening the telescope clamping screw A39623.

(b) Drive out the holder pin BFCX1N and remove the azimuth telescope holder B177288 from the associated segment and housing.

(c) Place a serviceable telescope holder in position and drive in the holder pin BFCX1N. Assemble all removed parts in the reverse order of disassembly.

17. TELESCOPE M7 OR M64.

a. To Inspect for Parallax.

(1) Observe a vertical target such as a telephone pole or a corner of a building between 100 and 120 yards away. Aline the vertical reticle line with this target. For this procedure the telescope may be either in the telescope holder or the sighting system or in a testing fixture. Whichever is used, it is imperative that the telescope not be moved during the test.

(2) Move the eye slightly from side to side; if the vertical line appears to move with respect to the target, parallax exists. Parallax can also be determined by observing a horizontal target and moving the eye up and down. Parallax does not have to exist in an extreme condition to be detected by the unaided eye. Repeat the test, using the collimating telescope. Any noticeable parallax should be a cause for rejection of the telescope.

b. To Correct Parallax.

(1) Remove the eyepiece cell locking screw A48017B (fig. 9). Look through the eyepiece end of the telescope. The reticle may be moved in and out to adjust for sharp definition as long as the movement is kept within the reticle window. Select some target 120 feet or more distant, and screw objective either in or out until all parallax is removed. **NOTE:** Use collimator to secure definition of the reticle. The naked eye can be used to secure elimination of parallax. When parallax is removed, definition of the field of view will be as sharp as possible. A collimating telescope should be used to check before drilling and tapping.

(2) Check the adjustment by looking through the telescope with the aid of the collimating telescope.

(3) Remove the objective cell locking screws A48017A and A48017B (fig. 9). Look through the eyepiece of the telescope. Screw the objective cell in or out until the field of view becomes sharp and clear. Check the adjustment by looking through the telescope with the collimating telescope. Replace the objective cell locking screws. If it is necessary to drill and tap a new hole in the objective cell, carefully remove all burrs and chips before replacing screws.

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6

c. **To Inspect the Field of View.** Point the telescope at the sky and observe the field of view; it should be clear and distinct. Repeat the above operations, using the collimating telescope. If any haziness or indistinctness is noticed, the optical parts are out of focus. Haziness or indistinctness may also be caused by dirt or moisture.

d. **To Focus the Optical Parts.**

(1) If the procedure for the elimination of parallax has been carefully carried out, the optical parts will be in focus. For the procedure to be followed, see subparagraph b, above.

(2) Check the adjustment by looking through the optical elements with a collimating telescope.

e. **To Inspect the Position of the Reticle Lines.**

(1) With the telescopes in the holders on the sighting system, and the sighting system attached to the gun carriage, accurately level the gun carriage.

(2) Place a plumb line several feet long about 6 feet in front of the elevation telescope. Aline this vertical line with the vertical reticle line. Note whether the vertical reticle line coincides with this plumb line. If the ends of the reticle line do not coincide, and adjustment is necessary.

(3) Repeat the above procedure by using the azimuth telescope.

f. **To Position the Reticle Line with Respect to a Plumb Line.**

(1) Remove the elevation telescope from its holder by loosening the clamping screw and sliding the telescope out in a direction parallel to its own length. Unscrew the eyepiece cell locking screw A48017B. Scribe a mark at the junction of the eyepiece cell and telescope tube. Unscrew the eyepiece cell B137233 (fig. 9) from the telescope tube.

(2) Unscrew the erector and reticle assembly locking screws A48017A and A48017B. Scribe a mark at the junction of the cell locking ring and the telescope tube. Unscrew the cell locking ring A48249. Scribe a mark at the junction of reticle cell locking ring and telescope tube. Unscrew the reticle locking ring. Loosen the reticle retaining ring A181627. Carefully rotate the reticle to bring the reticle line in coincidence with the plumb line and replace all removed parts in the reverse order of disassembly. Care should be exercised that no dust or fingerprint marks are left on the reticle upon assembly.

(3) For positioning the vertical reticle line of the azimuth telescope, follow the same general procedure as for the elevation telescope.

Section VI

DISASSEMBLY AND ASSEMBLY

	Paragraph
General	18
Sighting system M5 or M6	19
Telescope M7 or M64	20

18. GENERAL.

a. To preserve parts of the instruments, it is necessary to exercise diligent care and attention during disassembly, cleaning, assembly, and adjustment. The extent of disassembly for a certain job is determined by the repairman when he makes his detailed inspection.

b. Before reassembling the various parts, all dust, grease, and other extraneous matter, should be removed. Use SOLVENT, dry-cleaning, for cleaning metal components.

c. Optical elements and associated metal components should be carefully marked during disassembly to insure correct positioning upon assembly. Reference marks should be scribed when deemed advisable. Optical elements should be carefully cleaned and wrapped in clean PAPER, lens, tissue, pending assembly. Pay particular attention that right and left parts are properly marked while disassembling. It is physically possible to assemble many parts in an inverted position which will result in improper functioning. This can be avoided by properly marking or tagging those parts. An indelible pencil or diamond may be used for marking on unpolished surfaces of optical elements.

d. When assembling, all parts should be free of burs, metal chips, and dust. Extreme care should be exercised in cleaning reticles. Any scratch or foreign object left on the surface of the reticle will be magnified according to the power of the instrument. The reticle is usually the most difficult optical element to clean.

e. Screwheads should be sealed with a drop of VARNISH, shellac, on assembly on the head. Other sealing preparations are specified where necessary with the assembling instructions.

f. Defective parts should be replaced from stock. Replacement of parts which affect optical dimensions (such as the reticle cell) may necessitate a correction adjustment. After replacement of any optical part, the telescope should be checked to determine what adjustments, if any, are necessary.

g. When assembling threaded parts, such as locking rings and cells for the various parts, a light application of GREASE, lubricating, special, should be made to the male threads. Any excess grease will work itself to the outside and can be removed easily. Care should be exercised that no grease comes in contact with the optical parts.

ORDNANCE MAINTENANCE – SIGHTING SYSTEMS M5 AND M6

h. Force should not be used when disassembling or assembling optical parts, as breakage or chipping of these parts may result. When lenses become tilted during a disassembly or assembly operation, realine them in their cell before continuing the disassembly or assembly procedure.

i. Gears and detent mechanisms should be lubricated lightly before assembly and operated to the limit of motion in each direction to insure proper functioning.

j. After each major assembling operation, the sighting system should be checked to determine what adjustments, if any, are necessary. For inspection requirements and inspection procedure, refer to section IV.

19. SIGHTING SYSTEM M5 OR M6.

a. Owing to the fact that the Sighting Systems M5 and M6 are similar and in many respects identical, the following disassembling and assembling operations are equally applicable to both. In cases where the parts are not common to both systems, the piece marks of parts for both systems are given. The illustrations that accompany instructions are inserted to aid the maintenance man in carrying out the specific operations. In some cases, reference to figures 3 to 7 inclusive (Sighting System M5), and figures 11 to 14, inclusive (Sighting System M6), will be helpful.

b. To Disassemble the Right Gear Segment and Rack Housing Parts.

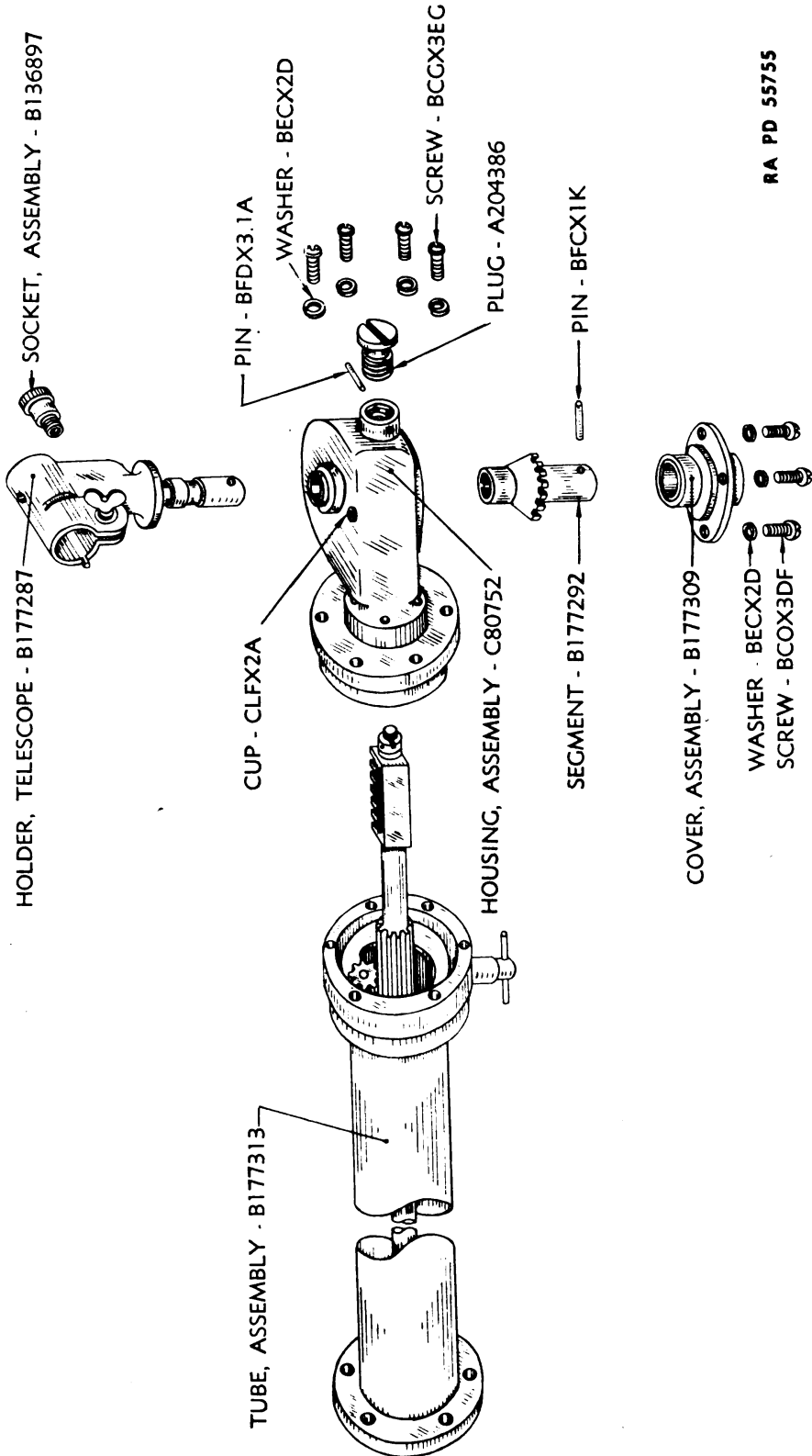
(1) Carefully remove the gear segment pin BFCX1K (fig. 18). Remove the four roundhead cover screws BCOX3DF with associated washers from the housing assembly C80752. Remove the segment cover assembly B177309 (fig. 18).

(2) Lift the telescope holder vertically from the housing. Remove the segment B177292 from the housing assembly. Remove the housing plug pin BFDX3.1A and unscrew the housing plug A204386. Unscrew the four housing screws BCGX3EG and remove the associated washers. Carefully extract the gear segment housing assembly C80752 from the tube assembly.

c. To Assemble the Right Gear Segment and Rack Housing Parts.

(1) Follow the same general procedure for assembly as for disassembly except in reverse order. When meshing the segment B177292 with the actuating rack A204381, mesh the teeth so that the end teeth on the rack engage with the end teeth on the segment as the rack is moved laterally with the control handle. If the teeth on these members are not meshed correctly, the mechanism will not function properly over the entire operating range.

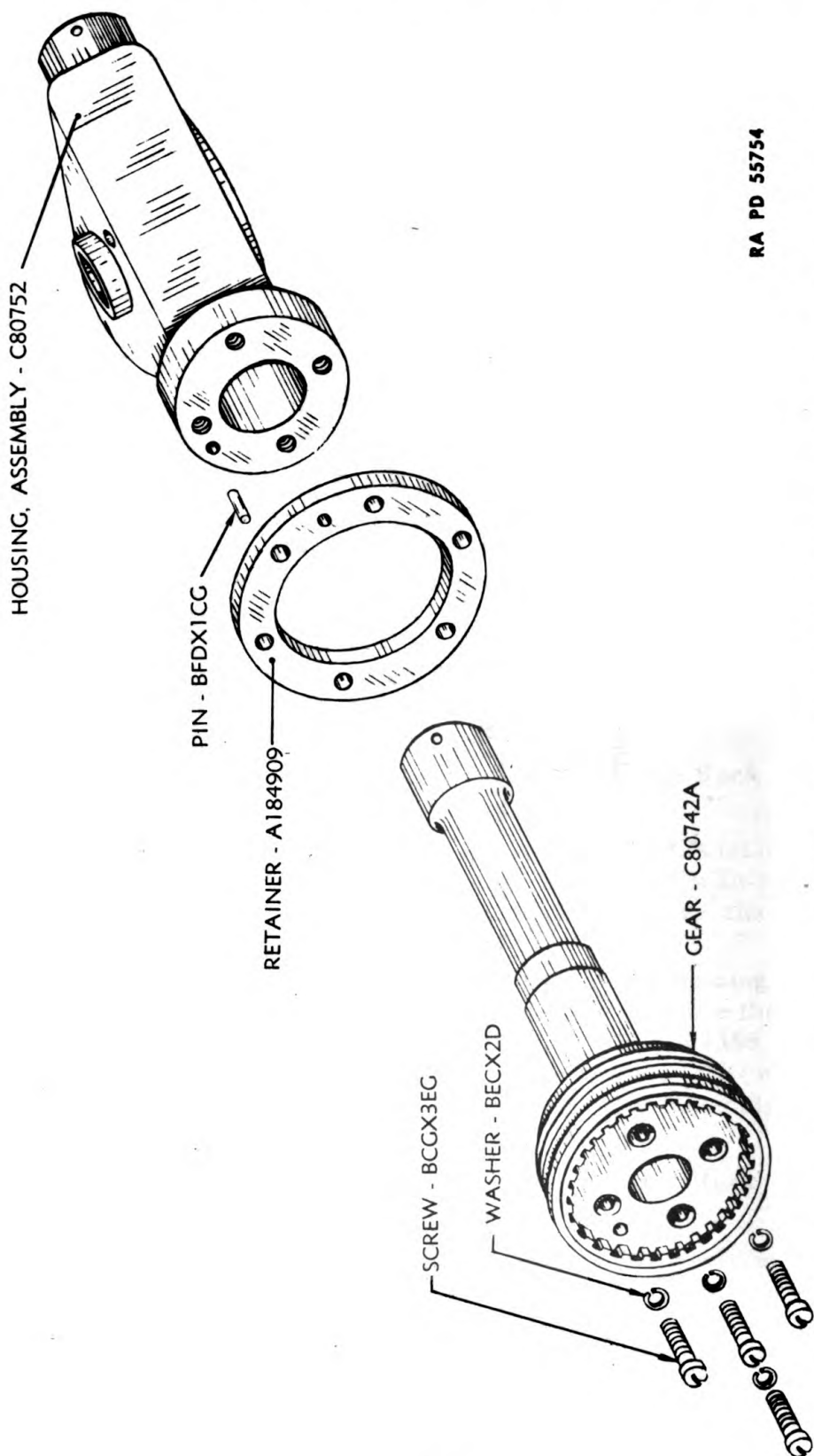
DISASSEMBLY AND ASSEMBLY



RA PD 55755

Figure 18 — Sighting System M5 or M6 — Disassembly of Right Gear Segment and Rack Housing Assembly and Related Parts

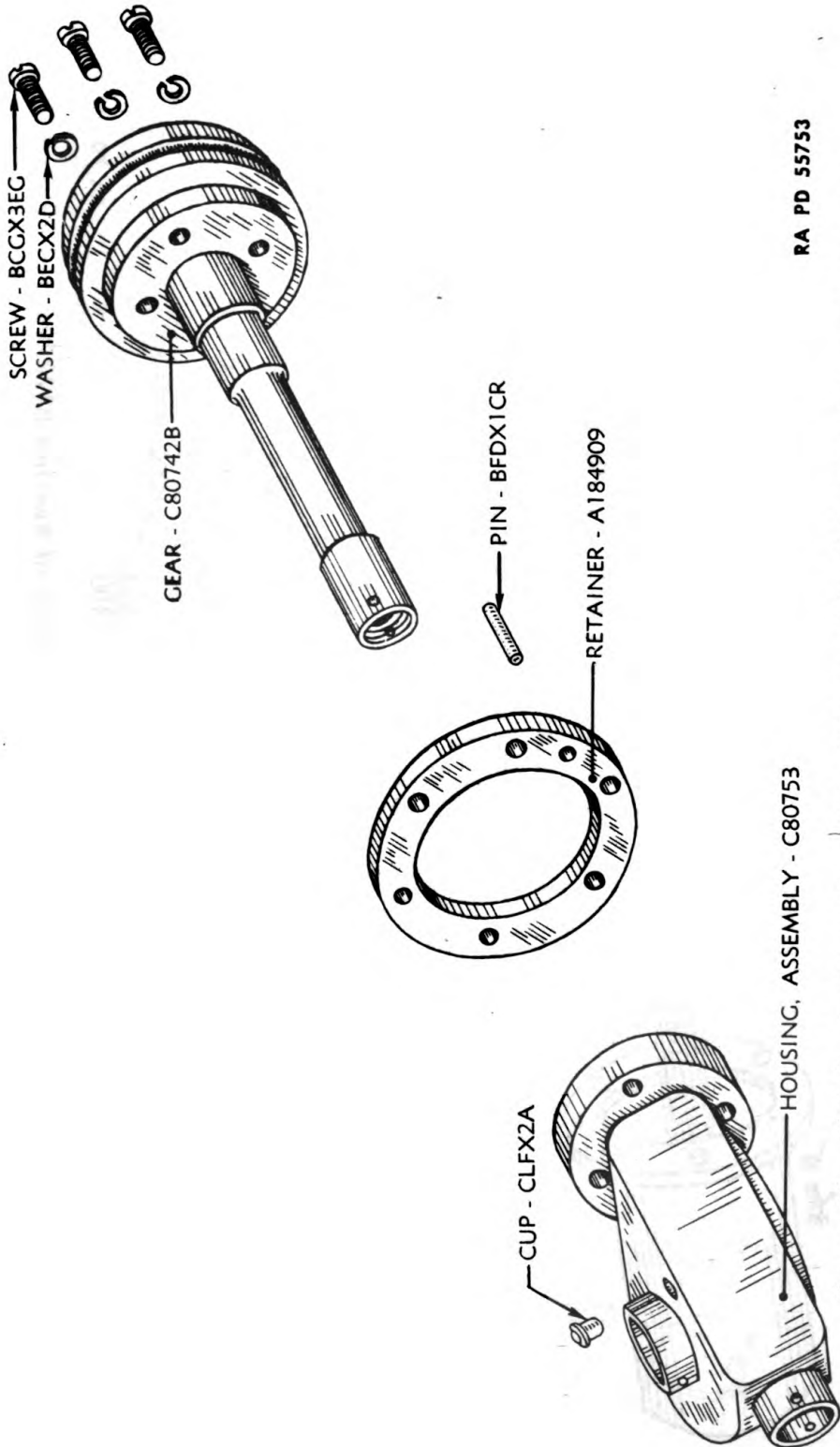
ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6



RA PD 55754

Figure 19 — Sighting System M5 or M6 — Disassembly of Gear and Retainer from Right Gear Segment and Rack Housing Assembly

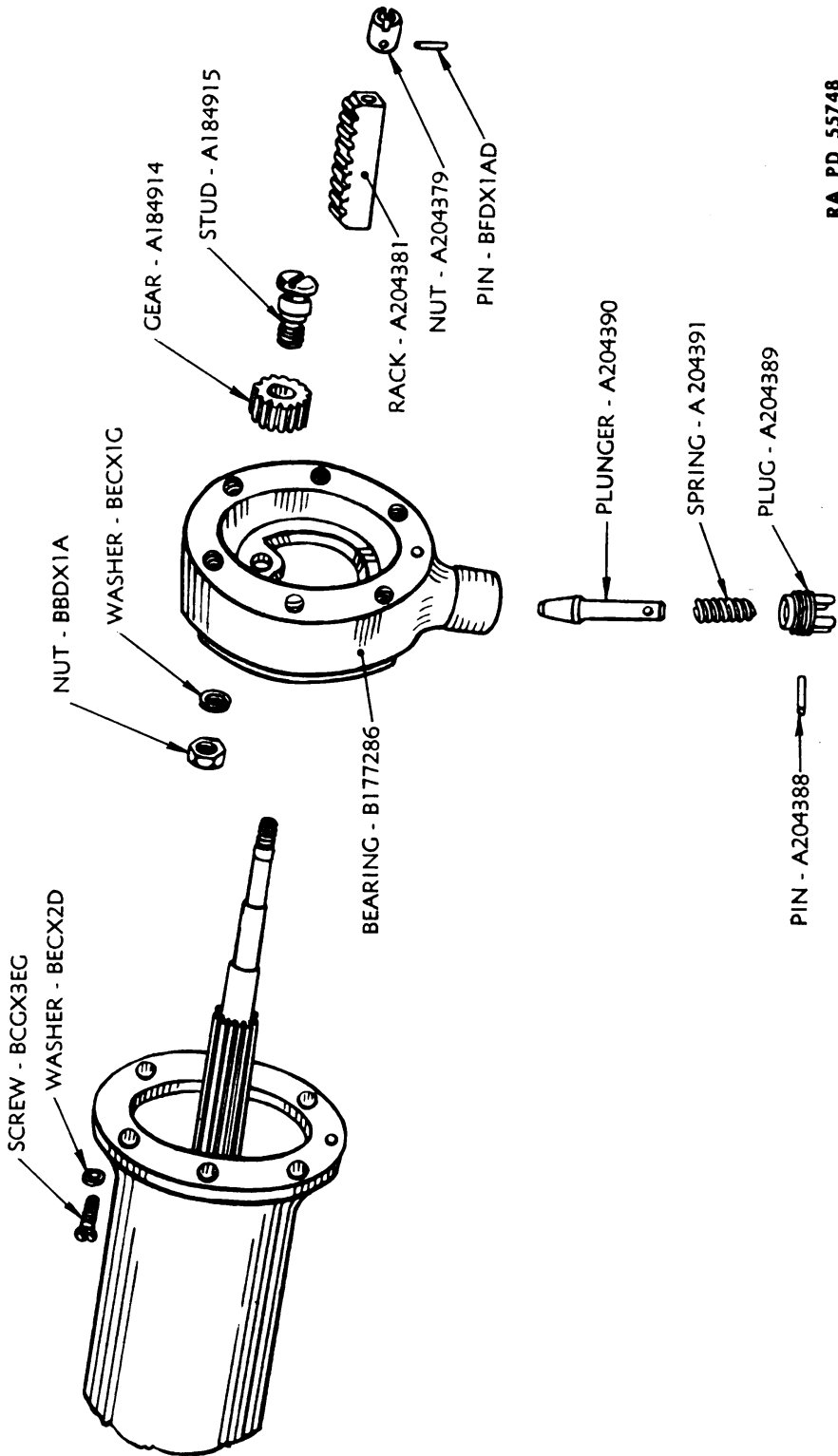
DISASSEMBLY AND ASSEMBLY



RA PD 55753

Figure 20 — Sighting System M5 or M6 — Disassembly of Gear and Retainer from Left Gear Segment and Rack Housing Assembly

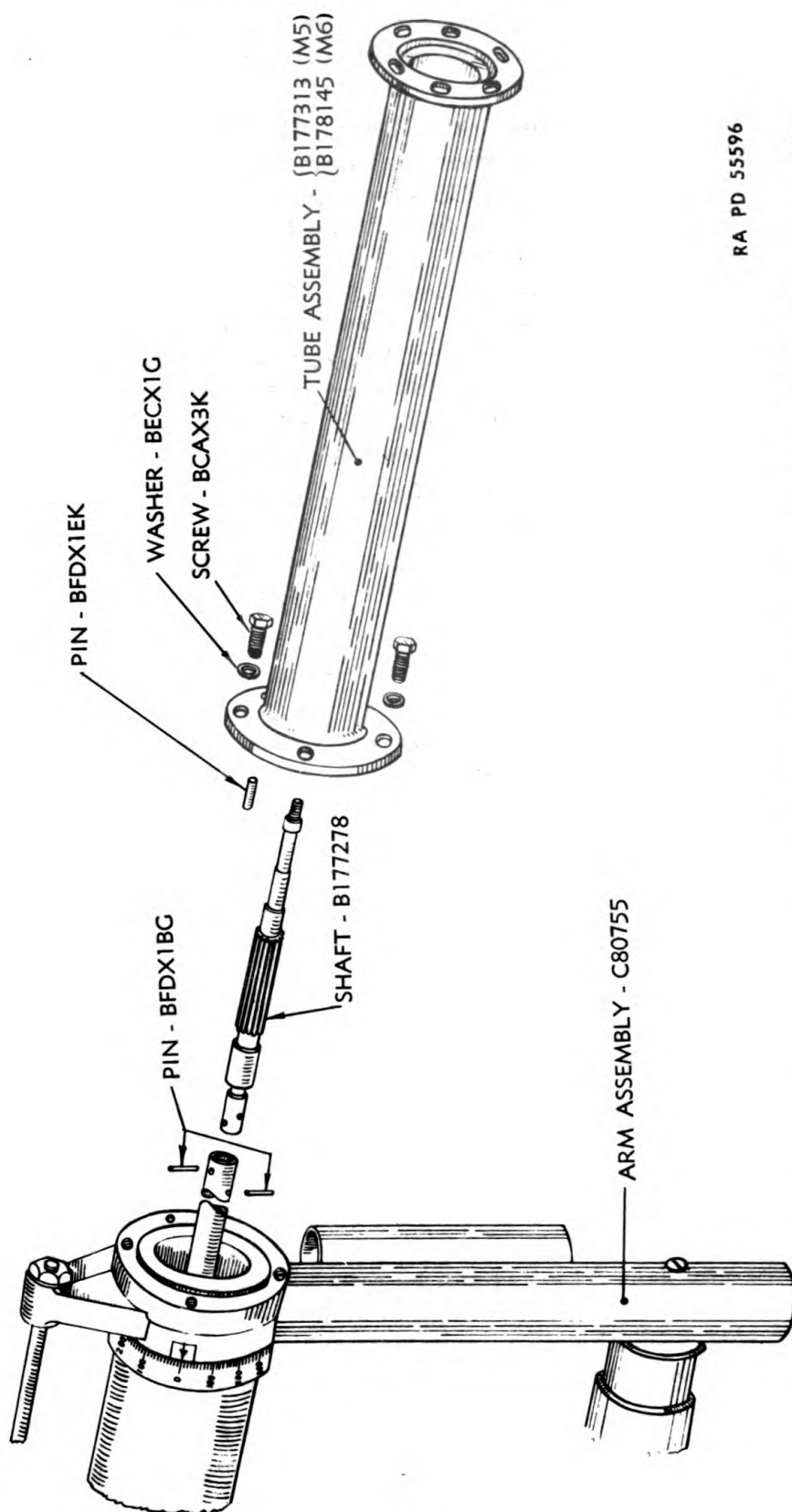
ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6



RA PD 55748

Figure 21 — Sighting System M5 or M6 — Disassembly of Bearing B177286 and Related Parts from Right Tube Assembly

DISASSEMBLY AND ASSEMBLY



RA PD 55596

Figure 22 — Sighting System M5 or M6 — Disassembly of Pinion Shaft and Right Tube Assembly

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6

(2) When replacing pins, make sure that the holes in the segment or plug are properly alined before driving the pin into the final position.

d. To Disassemble the Right Elevation Deflection Gear C80742A. With the gear segment housing assembly C80752 removed from the tube assembly B177313 as explained in subparagraph **b** (1) and (2), above, unscrew the four fillister-head screws BCGX3EG and remove the elevation deflection gear C80742A (fig. 19). Carefully remove the gear retainer A184909 and the retainer pin BFDX1CG.

NOTE: The procedure for disassembling the left elevation deflection gear C80742B (fig. 20) is the same as for the right elevation deflection gear. Care should be exercised that the right elevation deflection gear and the left elevation deflection gear are not interchanged when both of these disassembling operations are carried out.

e. To Assemble the Right Elevation Deflection Gear. Follow the same general procedure for assembly as for disassembly except in the reverse order. See that the hole in the end of the housing gear matches with the pinhole in the housing assembly before replacing the fillister head screws.

f. To Disassemble the Gear Bearing B177286 and Related Parts.

(1) Disassemble the elevation telescope holder housing parts as explained in subparagraph **b**, above.

(2) Remove the rack nut pin BFDX1AD and unscrew the nut A204379 (fig. 21). Slide the rack A204381 from the shaft.

(3) Drive out the locking plunger pin A204388 (fig. 21) and unscrew the plunger plug A204389. Extract the locking plunger A204390 and associated spring A204391. This operation is required only on systems equipped with a locking plunger.

(4) Remove the six bearing attaching screws BCGX3EG with associated washers BECX2D. Remove the gear bearing B177286. Unscrew the three nuts BBDX1A and extract the three gear studs A184915. Remove the three gears A184914 and washers BECX1G from the bearing. Figure 21 shows one of the gear groups disassembled.

g. To Assemble the Gear Bearing B177286 and Related Parts.

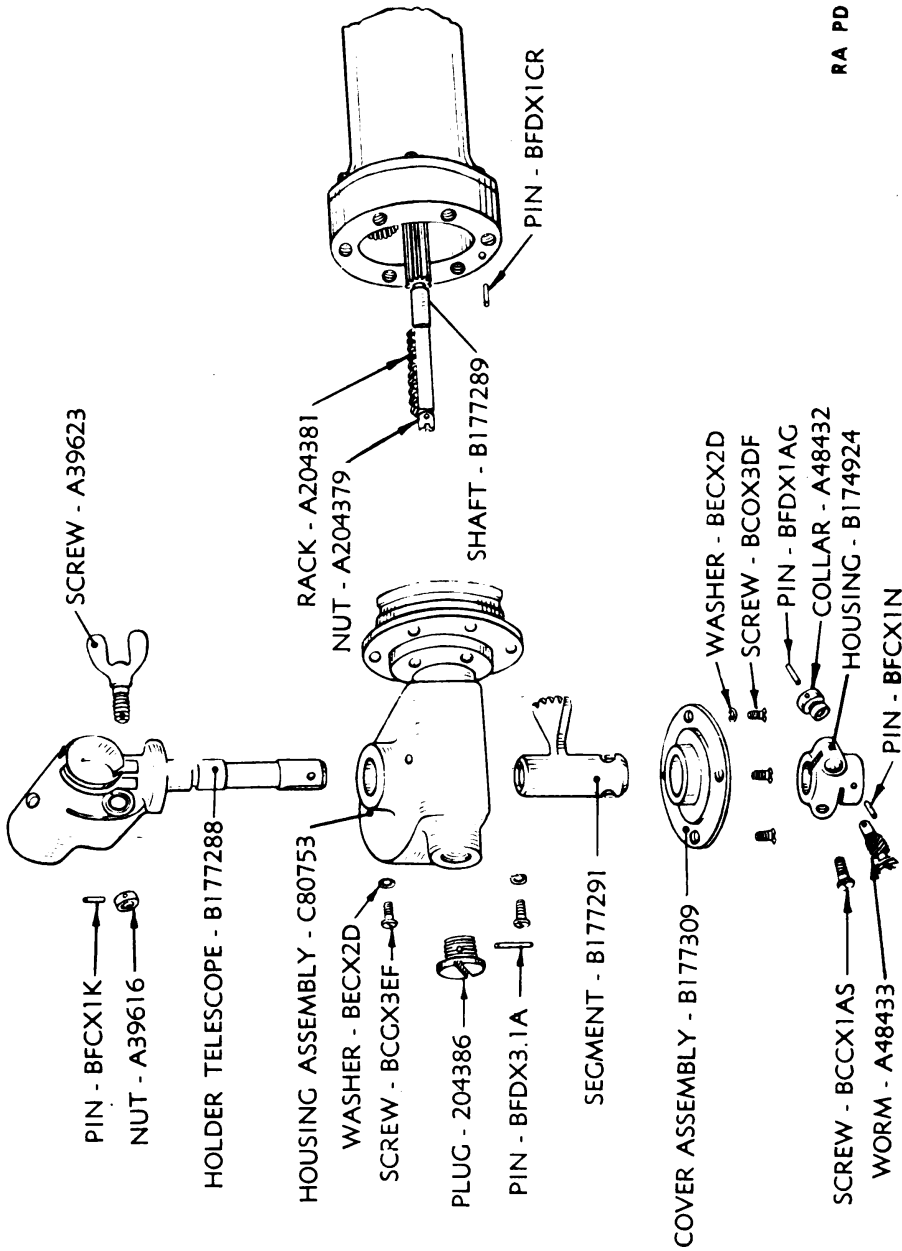
(1) Follow the same general procedure as for disassembly except in the reverse order. When assembling, make sure that the rack A204381 and gear A184914 can be rotated freely on their respective shafts without sticking or binding.

(2) Assemble the elevation telescope holder housing parts by following the procedure given in subparagraph **c**, above.

h. To Disassemble the Right Tube Assembly with Related Parts.

(1) Remove the gear bearing B177286 as explained in subparagraph **f**, above.

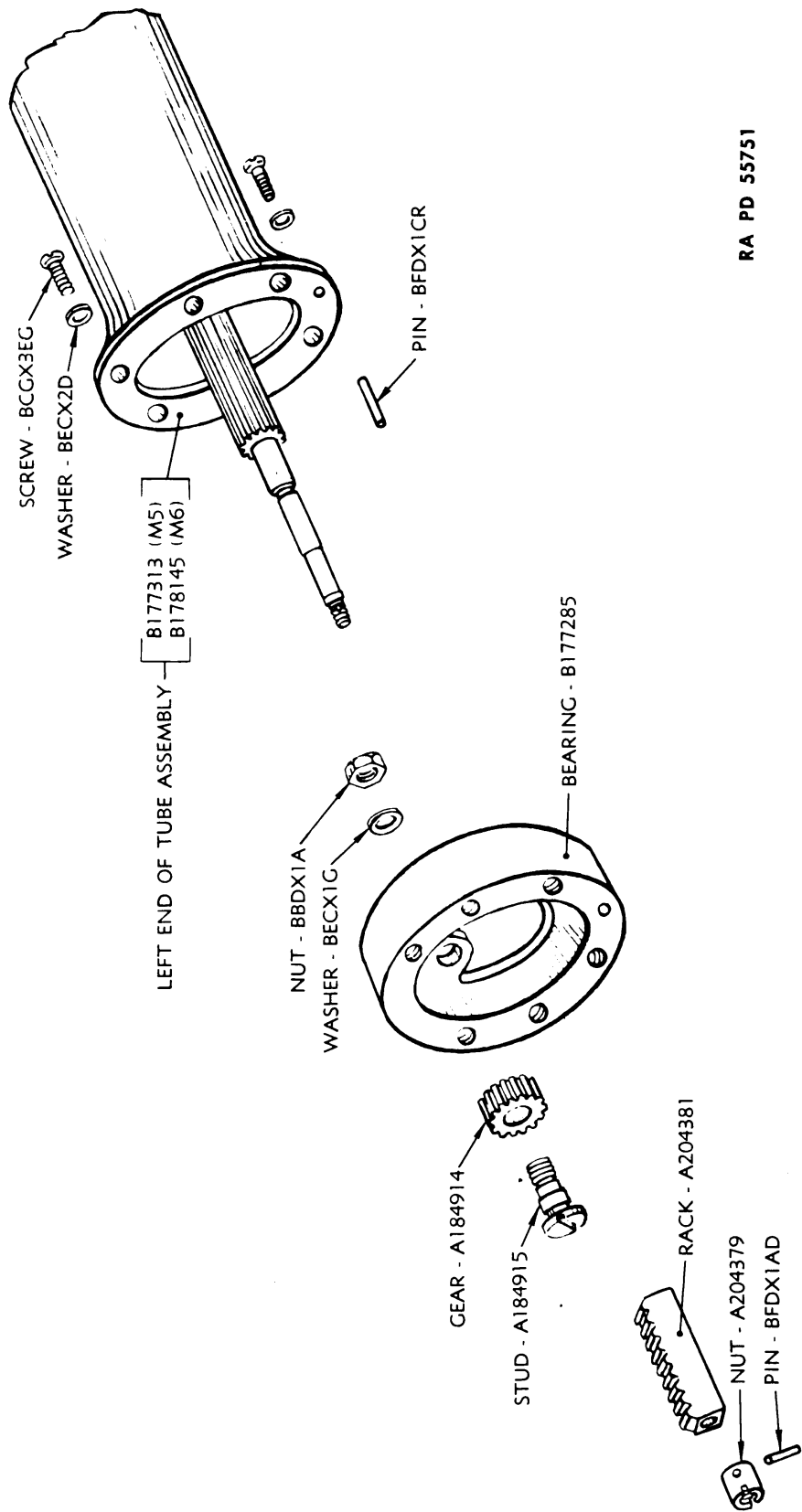
DISASSEMBLY AND ASSEMBLY



RA PD 55761

Figure 23 — Sighting System M5 or M6 — Disassembly of Left Gear Segment and Rack Housing Assembly and Related Parts

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6



RA PD 55751

Figure 24 — Sighting System M5 or M6 — Disassembly of Bearing B177285 and Related Parts from Left Tube Assembly

DISASSEMBLY AND ASSEMBLY

(2) Remove the four hexagonal head screws BCAX3K with associated washers BECX1G (fig. 22). Remove the tube assembly (B177313, M5; B178145, M6) from the right arm assembly C80755.

(3) Drive out both pins BFDX1BG and extract the shaft B177278 from the sighting system.

i. To Assemble the Right Tube Assembly with Related Parts.

(1) Follow the same procedure for assembly as for disassembly except in the reverse order.

(2) Replace the gear bearing B177286 by following the procedure given in subparagraph g, above.

j. To Disassemble the Left Gear Segment and Rack Housing Parts.

(1) Drive out the adjusting housing pin BFCX1N and unscrew the adjustment locking screw BCCX1AS (fig. 23). Drive out the collar pin BFDX1AG. Extract the adjusting screw collar A48432 and disengage the adjusting worm A48433 from the worm housing B174924.

(2) Slide off the adjusting housing B174924 and extract the telescope holder B177288 from the housing assembly C80753.

(3) Unscrew the four roundhead screws BCOX3DF and remove the associated washers BECX2D. Remove the segment B177291. Drive out the plug pin BFDX3.1A and unscrew the plug A204386.

(4) Remove the six housing attaching screws together with the associated washers BECX2D. Firmly grasp the gear segment and rack housing assembly C80753 with both hands and extract the housing in a direction parallel to the rack operating shaft B177289.

(5) If it is necessary to remove the telescope holder clamping screw A39623 (fig. 23), extract the pin BFCX1K, unscrew the nut, A39616, and remove the clamping screw.

k. To Assemble the Left Gear Segment and Rack Housing Parts.

(1) Follow the same general procedure for assembly as for disassembly except in the reverse order. When meshing the segment B177291 with the actuating rack A204381, mesh the teeth so that the end teeth on the rack engage with the end teeth on the segment as the rack is moved laterally with the control handle. If the teeth on these members are not meshed correctly, the mechanism will not function properly over the entire operating range.

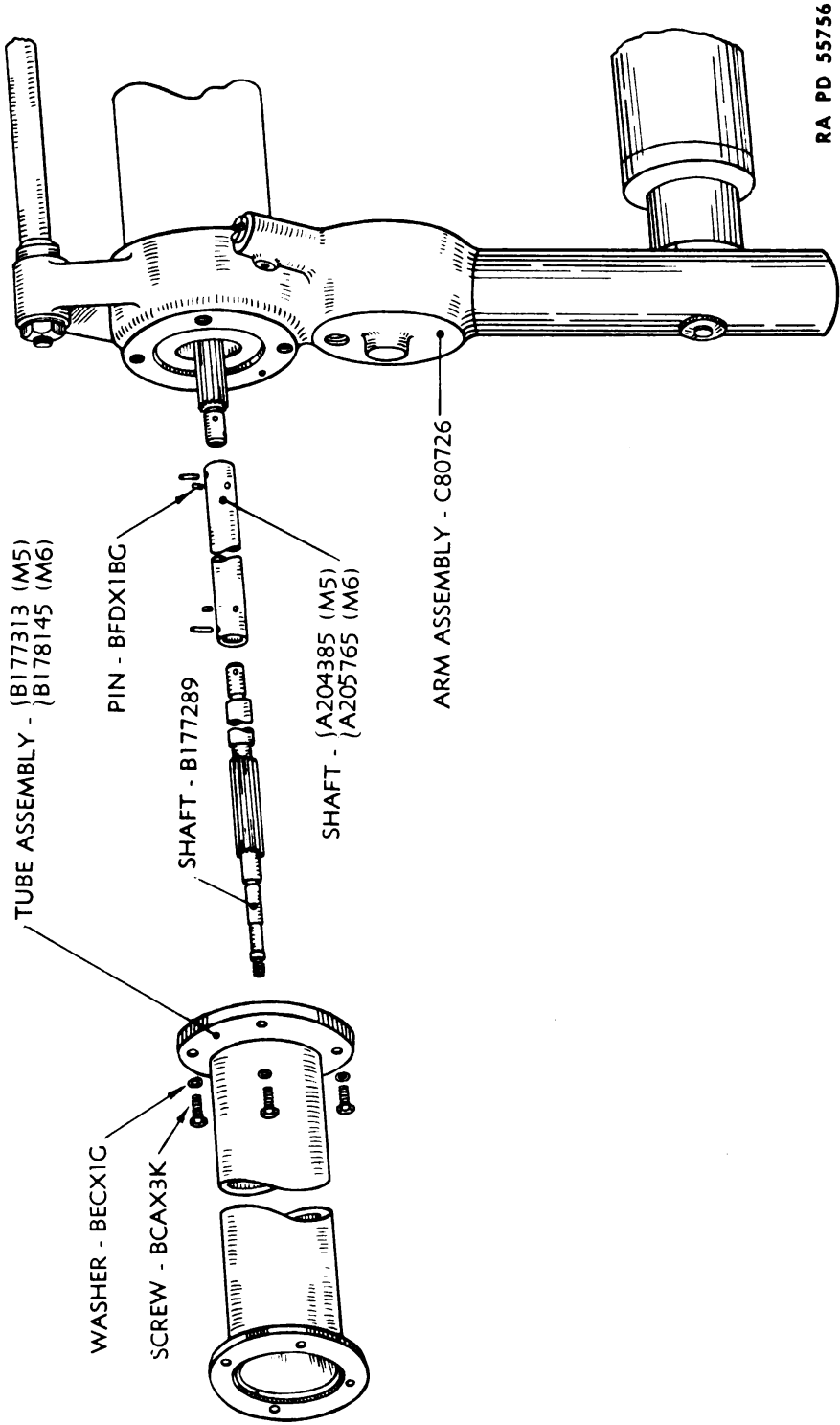
(2) After assembly, see that all moving parts function properly.

l. To Disassemble the Gear Bearing B177285 and Related Parts.

(1) Remove the gear segment and rack housing parts by following the procedure explained in subparagraph j, above.

(2) Drive out the rack nut pin BFDX1AD and unscrew the rack nut A204379 (fig. 24). Slide the rack A204381 from the actuating shaft.

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6



RA PD 55756

Figure 25 — Sighting System M5 or M6 — Disassembly of Left Pinion Shaft and Left Tube Assembly

DISASSEMBLY AND ASSEMBLY

(3) Remove the six bearing attaching screws BCGX3EG with associated washers BECX2D. Extract the bearing B177285 from the tube assembly. Remove the pin BFDX1CR. Unscrew the three stud nuts BBDX1A and remove the three studs A184915, gears A184914, and stud washers BECX1G from the bearing. Figure 24 shows one of the gear groups disassembled.

m. To Assemble the Gear Bearing B177285 and Related Parts.

(1) Follow the same general procedure as for disassembly except in the reverse order.

(2) To insure correct functioning, it is essential that the pin BFDX1CR be correctly positioned before replacing the attaching screws.

n. To Disassemble the Left Tube Assembly and Related Parts.

(1) Remove the gear bearing B177285 as explained in subparagraph l, above.

(2) Remove the four hexagonal head screws BCAX3K (fig. 25) with associated washers BECX1G. Remove the tube assembly (B177-313, M5; B178145, M6) from the left arm assembly C80726.

(3) Drive out the four shaft connecting pins BFDX1BG. Remove the rack actuating shaft B177289 and the tubular shaft (A204385, M5; A205765, M6) from the sighting system.

o. To Assemble the Left Tube Assembly and Related Parts. Follow the same general procedure for assembly as for disassembly except in the reverse order. See that the positioning pin is in its correct position before attaching the tube assembly.

p. To Disassemble the Left Arm Assembly C80726 and Related Parts.

(1) Disassemble the left tube assembly as explained in subparagraph n, above.

(2) Remove the special screw A48419 (fig. 26). Remove the nut BBAX1D and associated washer BECX1L. Remove the left arm assembly by pulling the arm in a direction parallel to the deflection actuating shaft.

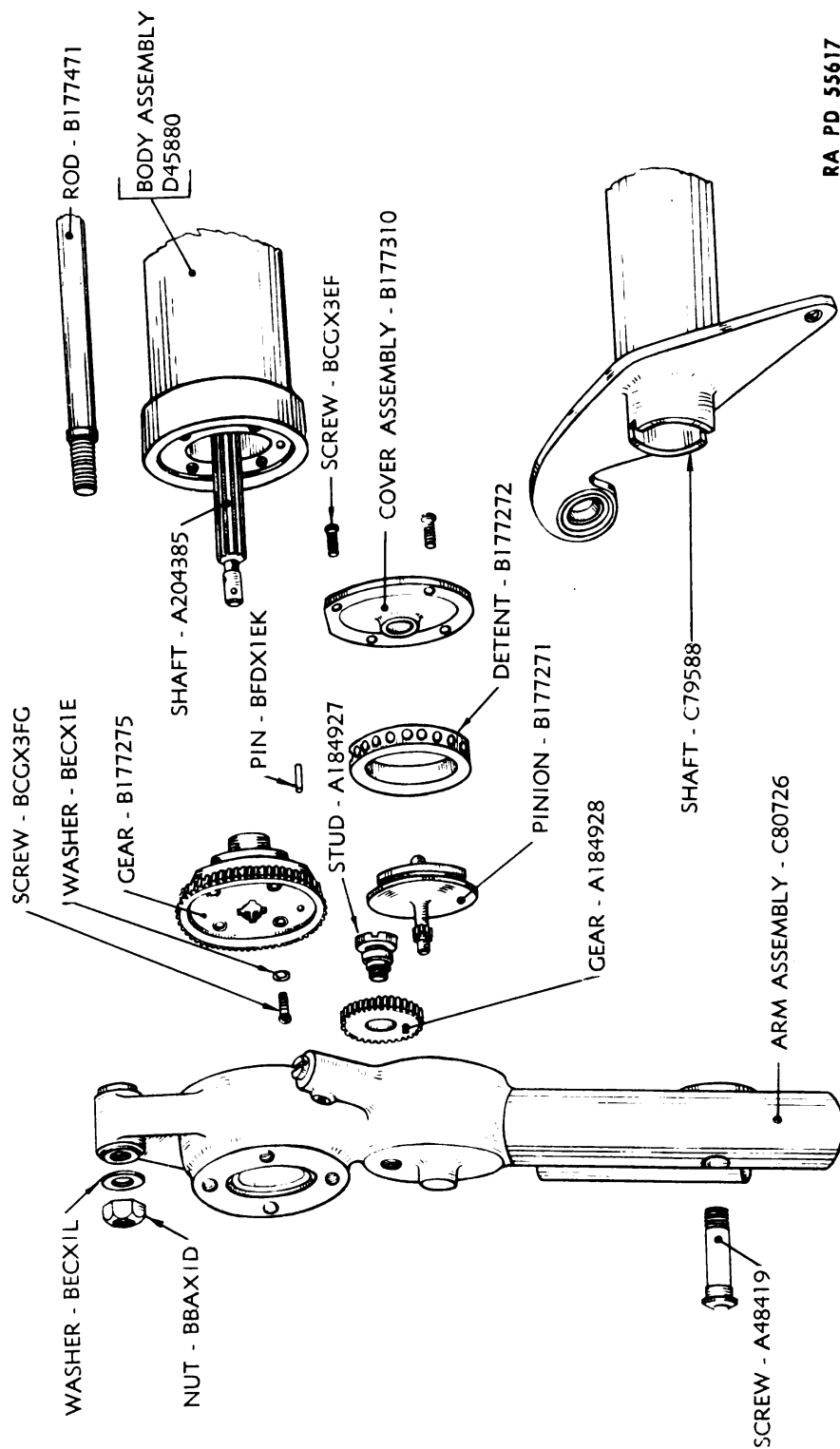
(3) Remove the four fillister-head screws BCGX3FG with the associated washers BECX1E. Slide the detent gear B177275 from the deflection actuating shaft. Remove the dowel pin BFDX1EK.

(4) Remove the detent plunger plug locking screw BCUX1ED (fig. 27). Unscrew the plunger plug A39406 and extract the plunger spring A204364 with plunger A204363 from the arm C80728.

NOTE: The arm C80728 has two plungers, the removal procedure for either one is the same.

(5) Remove the four cover assembly attaching screws BCGX3EF (fig. 26). Remove the detent cover assembly B177310. Remove the detent pinion from the arm assembly. Unscrew the stud A184927 and remove the gear A184928. The detent B177272 may be removed

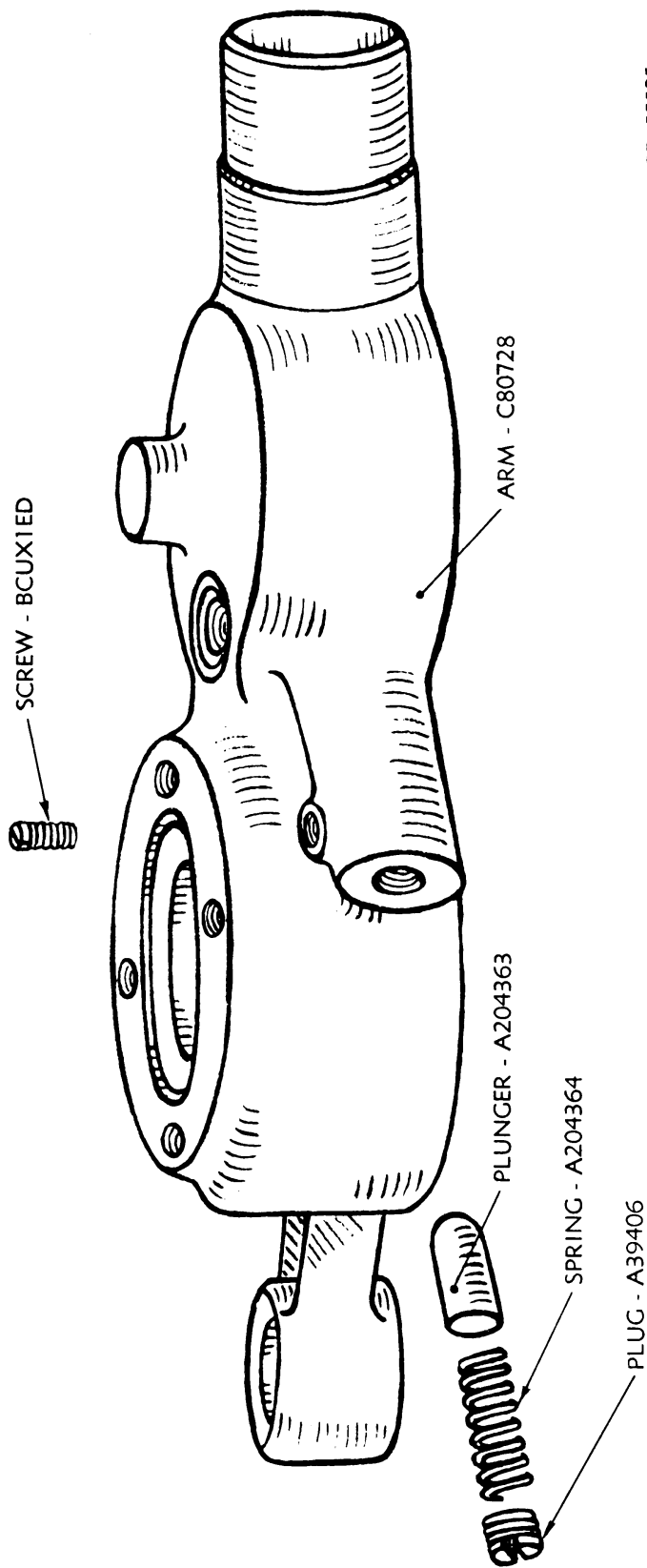
ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6



RA PD 55617

Figure 26 — Sighting System M5 or M6 — Disassembly of Left Arm Assembly and Related Parts

DISASSEMBLY AND ASSEMBLY



RA PD 55595

Figure 27 — Sighting System M5 or M6 — Disassembly of Elevating Detent Plunger Parts

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6

from the detent pinion B177271 only if absolutely necessary, as the detent is a press fit on the detent pinion.

q. To Assemble the Left Arm Assembly and Related Parts.

Follow the same general procedure for assembly as for disassembly except in reverse order. See that the detent gear is correctly positioned with respect to the dowel pin before tightening the screws. Care should be exercised that the detent plungers are tightened enough so that the detents function over the entire operating range without binding.

r. To Disassemble the Deflection Actuating Shaft B177278 and Related Parts from the Right Arm Assembly C80755.

(1) Remove the left arm assembly as explained in subparagraph p (1) to (3), above.

(2) Unscrew the special screw A48419 (fig. 28) and remove the nut BBAX1D and washer BECX1L. Carefully extract the arm assembly C80755 from the body assembly D45880. Remove the four fillister-head screws BCGX3EG with the associated washers from the adapter assembly B177280.

(3) Extract the deflection actuating shaft B177278 together with the connecting shaft from the body assembly. Remove the adapter assembly B177280 from the body assembly. Drive out the two shaft connecting pins BFDX1BG and extract the shaft B177278 from the tubular shaft (A20414, M5; A205766, M6).

s. To Assemble the Deflection Actuating Shaft B177278 and Related Parts.

(1) Follow the same general procedure for assembly as for disassembly except in the reverse order. Care should be exercised that the teeth on the actuating shaft B177278 are properly meshed with the actuating gear B177281 (fig. 29).

(2) Assemble the left arm assembly by following the procedure given in subparagraph 10 p, above, in the reverse order.

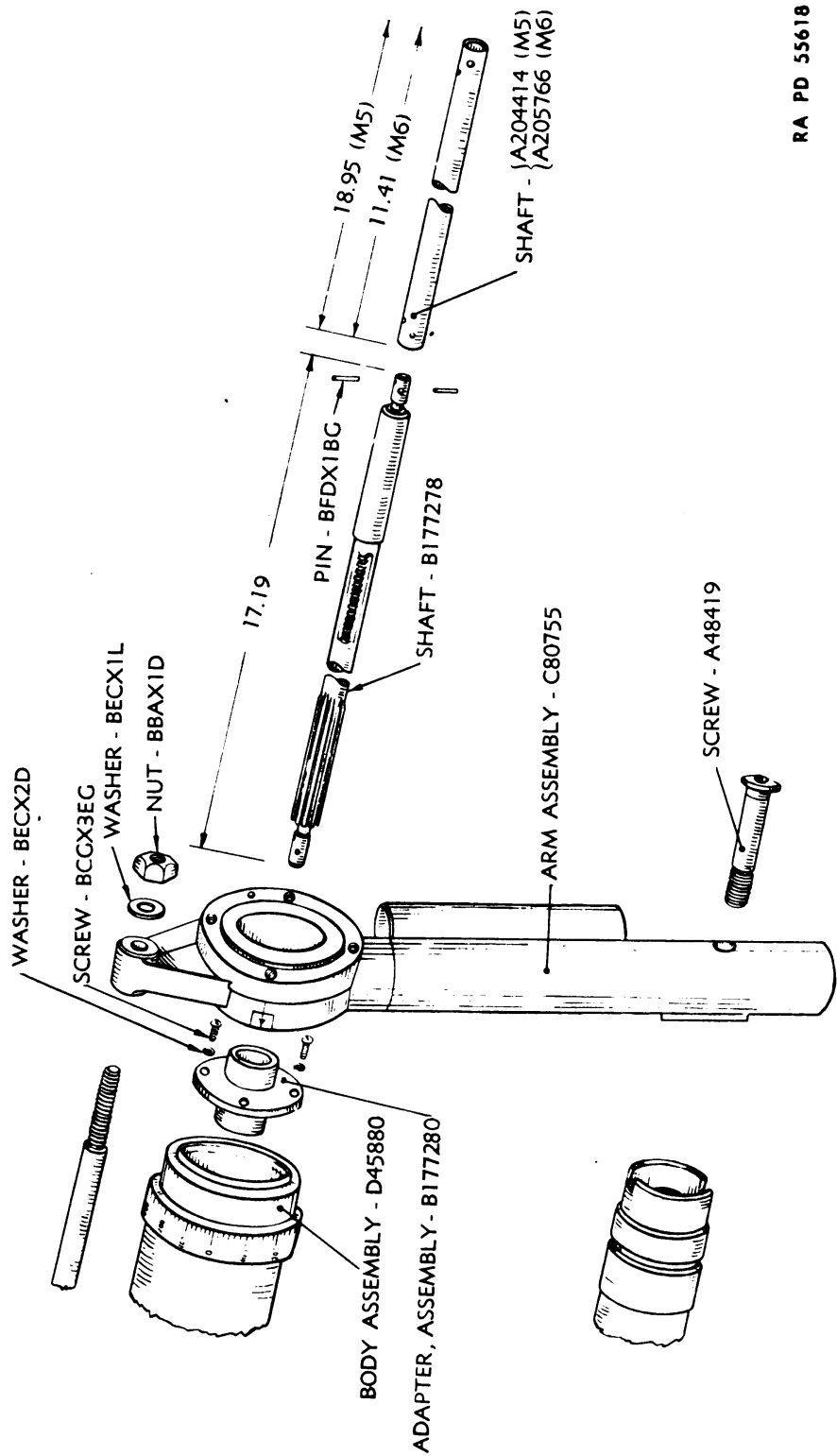
t. To Disassemble the Deflection Control Handle and Related Parts.

(1) Disassemble the deflection actuating shaft as explained in subparagraph r, above. Remove the control handle pin BFDX1BH (fig. 29) and slide off the control handle A204407. Remove the three roundhead dial attaching screws BCOX3CD and associated washers BECX1C. Remove the dial washer A184922 and the lateral deflection dial B174934. Drive out the dial adapter pin BFDX1BH and remove the dial adapter B177273 from the shaft of the gear B177281.

(2) Unscrew the four flathead adapter attaching screws. Extract the deflection gear B177281 together with the adapter assembly B177312. This adapter assembly may be disassembled if necessary.

(3) Remove the plug locking screw BCUX1ED. Unscrew the pin plug A39406. Extract the spring A204368 with associated pin. Lift out the shoe A204367.

DISASSEMBLY AND ASSEMBLY



RA PD 55618

Figure 28 — Sighting System M5 or M6 — Disassembly of Right Arm Assembly and Deflection Actuating Shaft with Related Parts from Body Assembly

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6

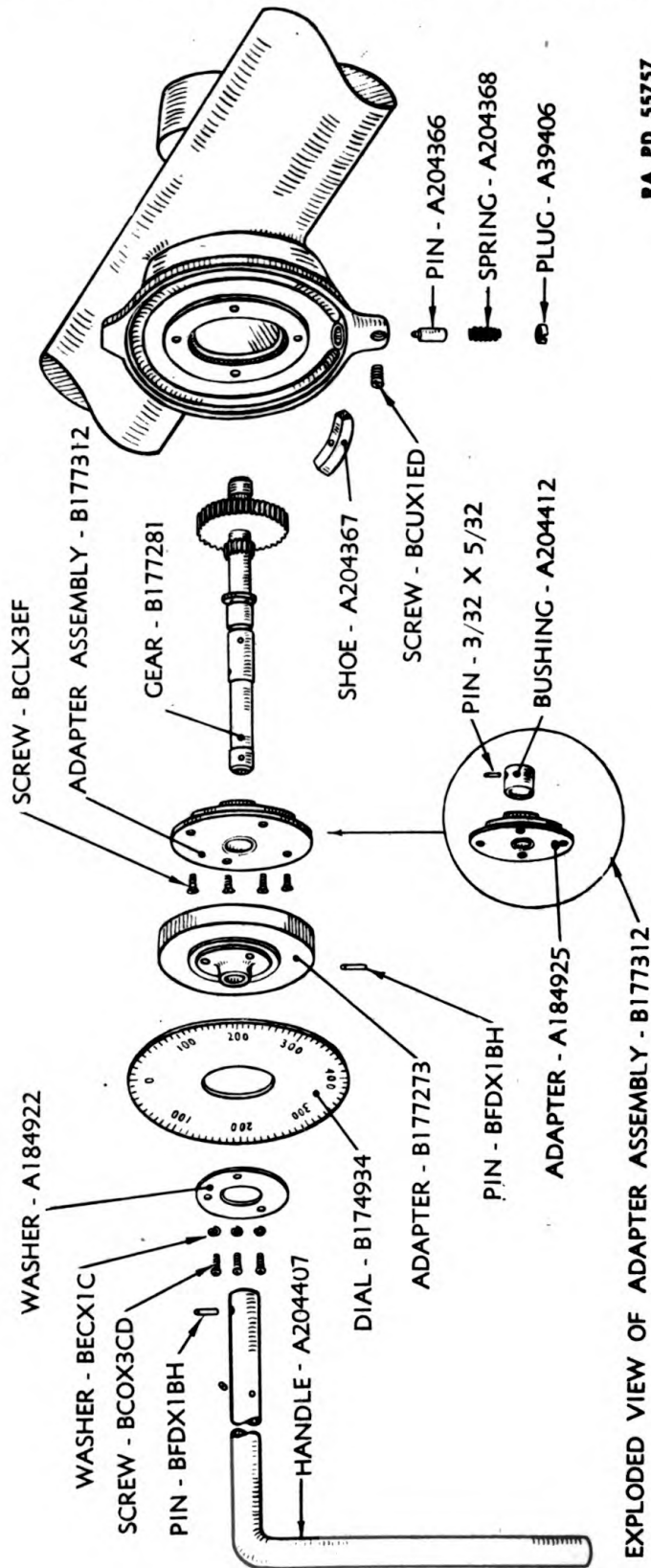
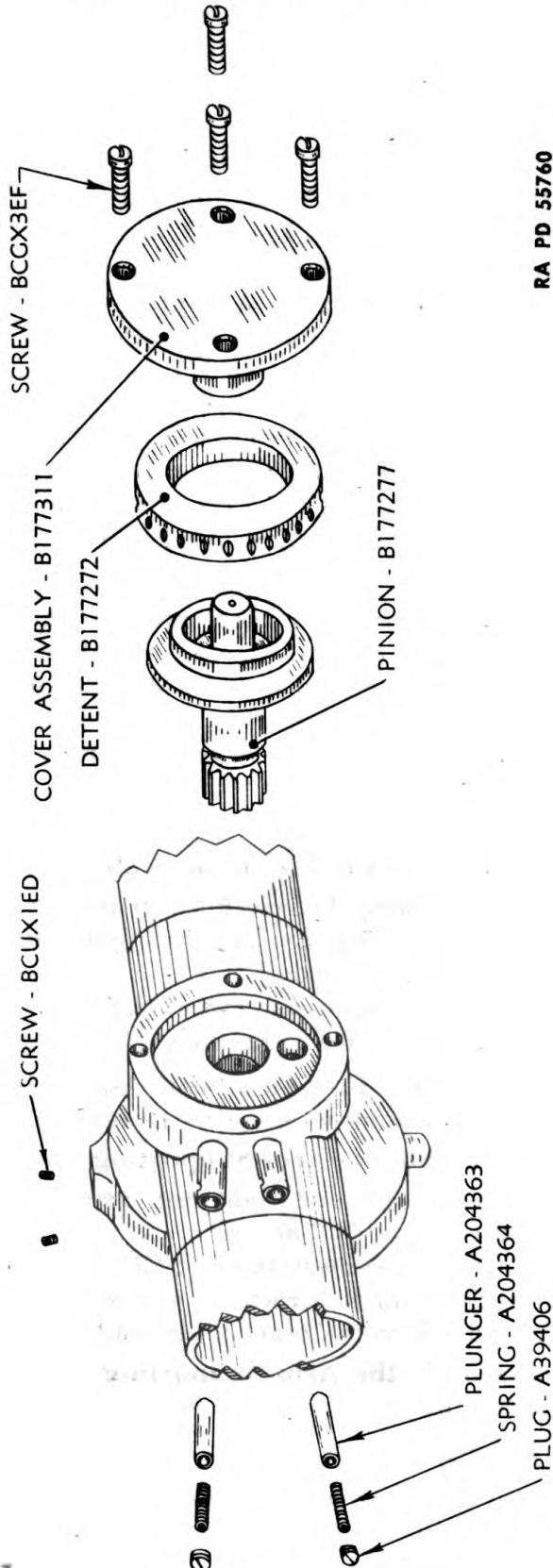


Figure 29 — Sighting System M5 or M6 — Disassembly of Deflection Control Handle and Related Parts

DISASSEMBLY AND ASSEMBLY



RA PD 55760

Figure 30 — Sighting System M5 or M6 — Disassembled View of Detent Mechanism of Lateral Deflection Mechanism

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6

u. To Assemble the Deflection Control Handle and Related Parts. Follow the same general procedure for assembly as for disassembly except in the reverse order. After the various parts have been assembled, adjust the lateral deflection dial according to the instructions given in paragraph 16 i (1) and (2).

v. To Disassemble the Detent Mechanism of the Lateral Deflection Mechanism.

(1) Unscrew the detent plunger locking screw BCUX1ED (fig. 30). Unscrew the plunger plug A39406. Extract the plunger spring A204364 and plunger A204363 from the body.

NOTE: This mechanism has two identical plungers with related parts. The removal procedure for either plunger is the same.

(2) Remove the four fillister-head screws BCGX3EF (fig. 30). Extract the cover assembly B177311 and pinion B177277 with detent B177272 from the body assembly. Remove the detent B177272 from the detent pinion B177277 only if absolutely necessary, as the detent is a press fit on the pinion.

w. To Assemble the Detent Mechanism of the Lateral Deflection Mechanism. Follow the same general procedure for assembly as for disassembly except in the reverse order. Adjust each detent plunger so that the mechanism operates without undue looseness or binding. The plugs should be screwed in far enough to provide pressure on the plunger springs to eliminate any "creep" or introduction of an accidental deflection setting.

x. To Disassemble the Elevation Scale Assembly.

(1) Remove the special screw A48419 and the nut BBAX1D with washer BECX1L (fig. 28). Extract the right arm assembly C80755 from the sighting system body.

(2) Loosen both headless screws BCUX1FE (fig. 31). Slide the scale assembly B177459 from the body of the sighting system.

y. To Assemble the Elevation Scale Assembly. Follow the same procedure as for disassembly except in the reverse order.

z. To Disassemble the Arm Supporting Shaft.

(1) Remove the left and right arm assemblies as explained in subparagraph r (1) and (2), above.

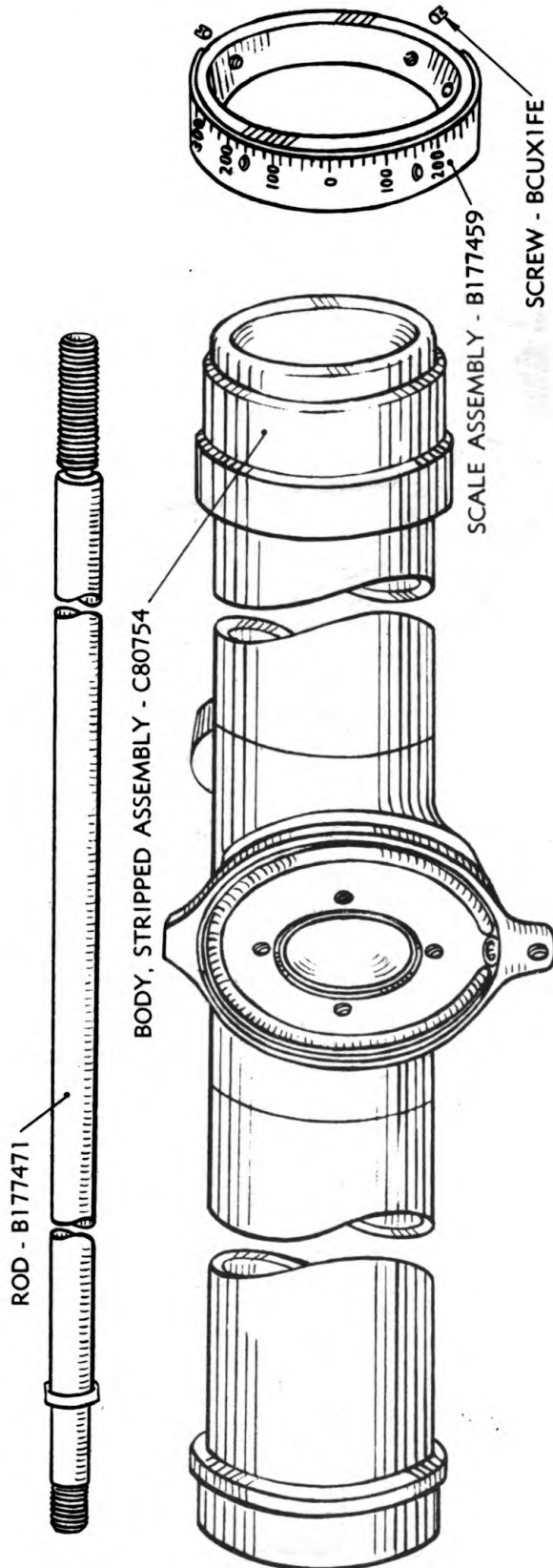
(2) Remove the headless screw BCUX1ED (fig. 32). Remove the retainer A184989 and extract the arm supporting shaft (C79588, M5; C81220, M6) from the bracket assembly.

aa. To Assemble the Arm Supporting Shaft. Follow the same general procedure as for disassembly except in the reverse order.

20. TELESCOPE M7 OR M64.

a. To carry out these disassembly and assembly operations, the telescope is removed from the telescope holder and replaced in the

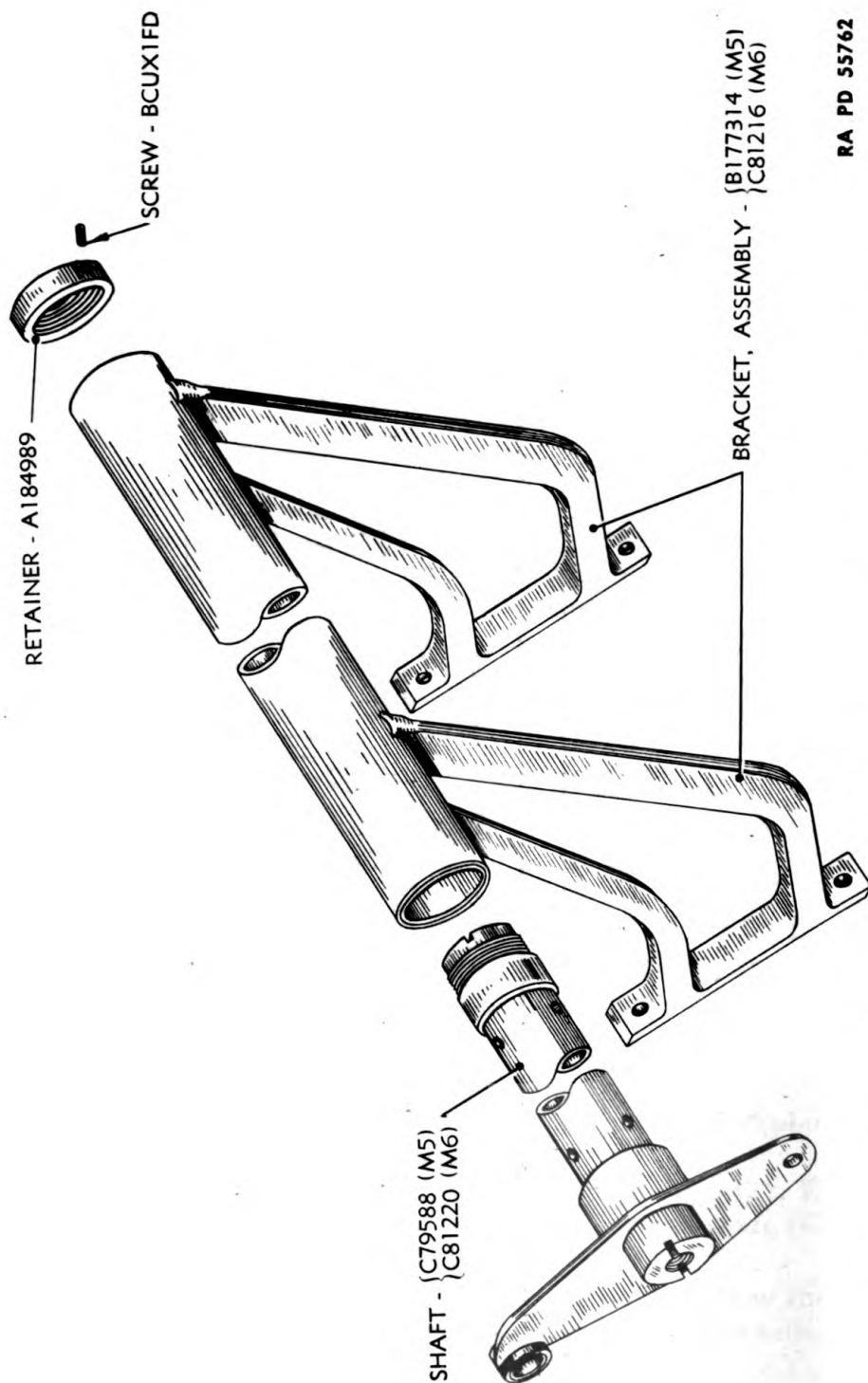
DISASSEMBLY AND ASSEMBLY



RA PD 55750

Figure 31 — Sighting System M5 or M6 — Body Rod and Removal of Scale Assembly from Body Assembly

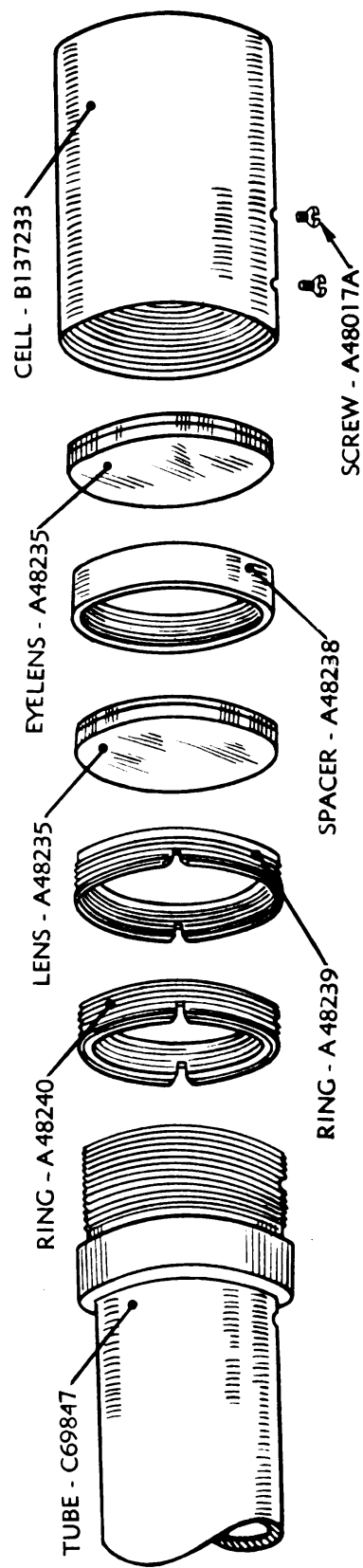
ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6



RA PD 55762

Figure 32 — Sighting System M5 or M6 — Removal of Support Shaft from Bracket Assembly

DISASSEMBLY AND ASSEMBLY



RA PD 55752

Figure 33 — Telescope M7 or M64 — Disassembly of Eyepiece Cell Parts

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6

holder after assembly. The removal procedure is accomplished by loosening the telescope holder clamping screw A39623 (secs. E-E, figs. 6 and 14) and extracting the telescope from the holder. The assembly is the reverse of the removal procedure. When assembling, care should be exercised that the projection on the holder is properly fitted into the groove on the telescope.

b. To Disassemble the Eyepiece Cell Parts.

(1) Unscrew both locking screws A48017A (fig. 33). Scribe a mark across the adjoining edges of the telescope tube and eyepiece cell B137233. Unscrew the eyepiece cell B137233.

(2) Scribe a mark across the edges of the eyepiece locking and retaining rings. Unscrew the retaining ring A48240 and locking ring A48239. Carefully remove the lens A48235, lens spacer A48238, and eyelens A48235 from the eyepiece. This can usually be done by turning the cell in a vertical position with the retaining ring on the bottom. As the retaining ring is unscrewed, the lens should ride out on top of the ring. If the lens should stick in the cell, gently tap the cell with a soft object. Care should be exercised that the lenses are not tilted (cocked) during this procedure. After removal, wrap both lenses in clean PAPER, lens, tissue, and store in a safe place. As each lens is removed, place a mark on the unpolished edges to insure correct positioning upon assembly. An arrow and the letters "F" and "R" should be used for this.

c. To Assemble the Eyepiece Cell Parts. Follow the same general procedure for assembly as for disassembly except in the reverse order. Make sure that the lenses are replaced in accordance with the markings scribed thereon. See that all dust and foreign objects are removed from the lens, lens spacer, etc., prior to assembly. Place a light coat of GREASE, lubricating, special, on the male threads of the telescope tube (C69847, M7; or C81006, M64) (fig. 30) before assembling the eyepiece cell B137233 (fig. 12) to the telescope tube.

d. To Disassemble the Diaphragm and Objective Cell Parts.

(1) Remove the flathead screws A48017A and A48017B (fig. 34). Scribe a mark at the junction of the objective cell and locking ring. Unscrew the objective cell locking ring A48252. Unscrew the objective assembly B136899 from the telescope tube. Unscrew the objective cell locking ring A48243 and retaining ring A48250. Place a small piece of clean PAPER, lens, tissue on each side of the objective. With the thumb, gently push the objective out of the cell A48251 (fig. 34). Exercise care that the bare fingers do not come in contact with the objective. Wrap the objective in clean PAPER, lens, tissue, and keep it in a safe place.

(2) Unscrew the diaphragm retaining screw A48017A. Extract the diaphragm A48242. This can usually be accomplished by use of a small hook bent on the end of a wire about 6 inches long.

DISASSEMBLY AND ASSEMBLY

RA PD 55749

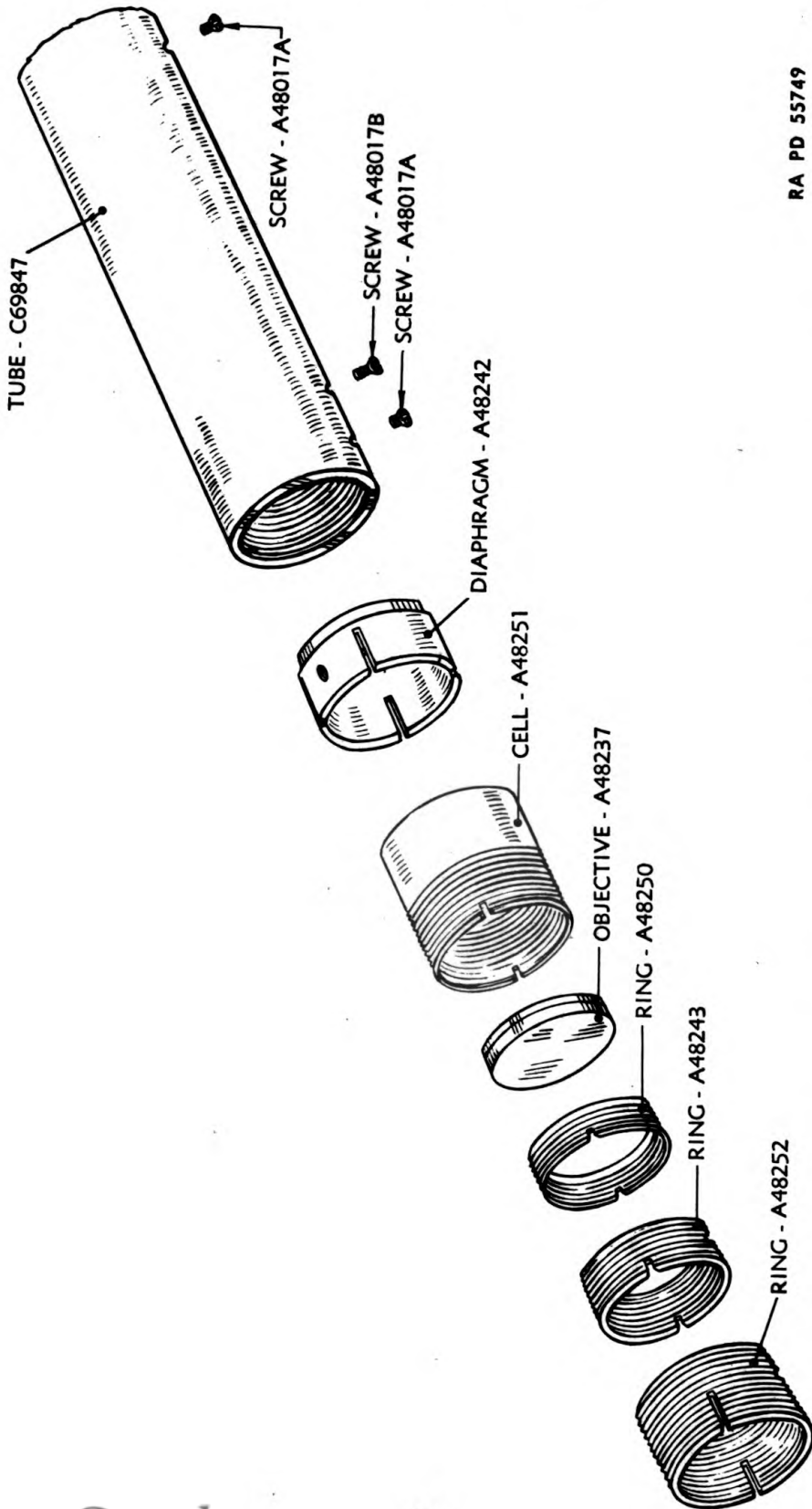
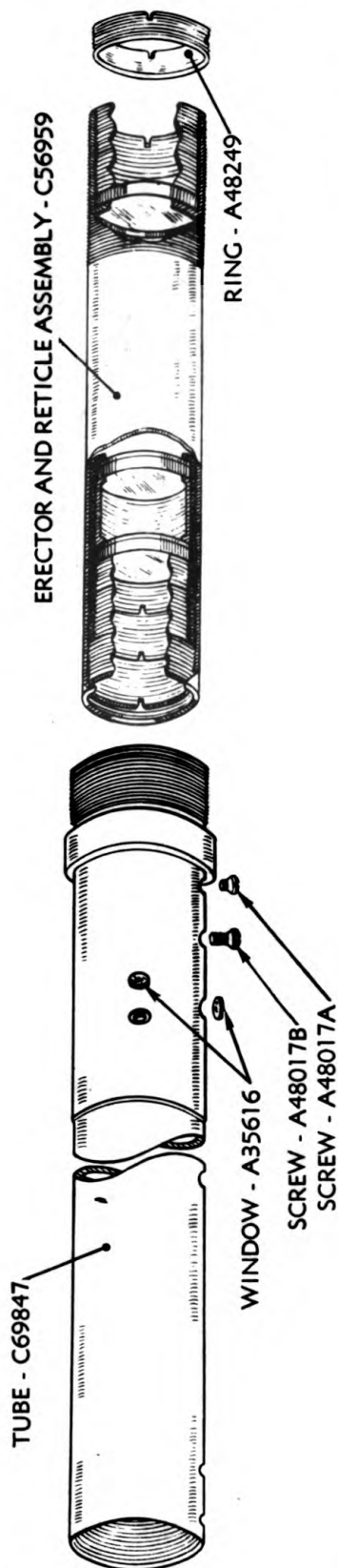


Figure 34 — Telescope M7 or M64 — Disassembly of Diaphragm and Objective Cell Parts

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6



RA PD 57207

Figure 35 — Telescope M7 or M64 — Removal of Erector with Reticle Assembly from Telescope Tube

DISASSEMBLY AND ASSEMBLY

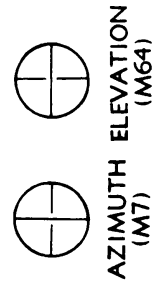
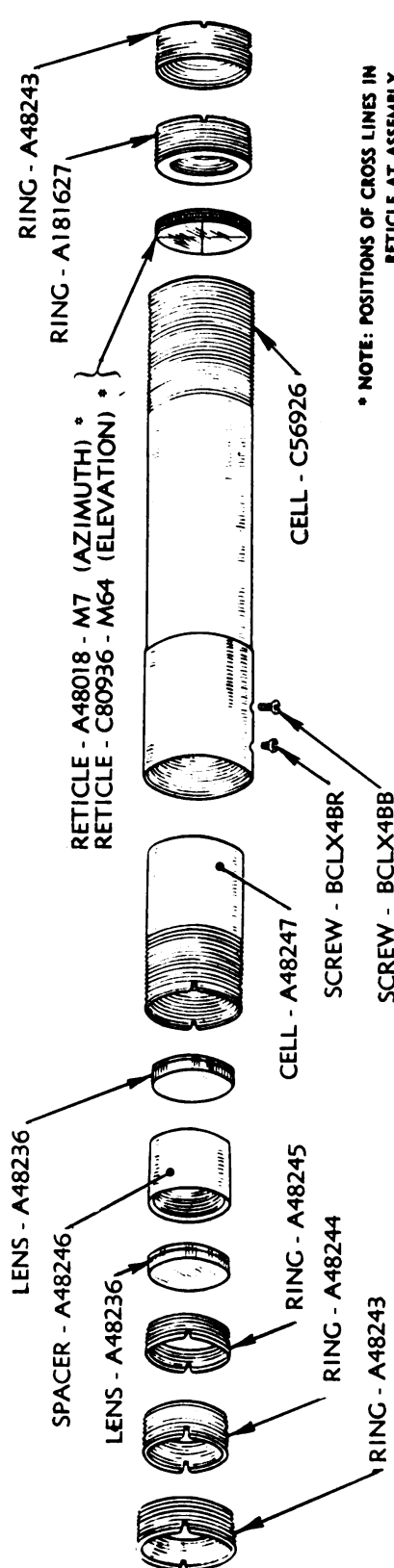


Figure 36 — Telescope M7 or M64 — Disassembly of Erector and Reticle Cell Parts

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e. **To Assemble the Diaphragm and Objective Cell Parts.** Follow the same general procedure for assembly as for disassembly except in the reverse order. See that all dust and foreign objects are removed from all optical and associated parts before assembly. Make sure that all scribed marks are properly matched upon assembly.

f. **To Remove the Erector with Reticle Assembly from the Telescope Tube.**

(1) Remove the eyepiece assembly C56924 (fig. 9) as explained in subparagraph b (1), above.

(2) Remove both locking screws A48017A and A48017B located near the eyepiece end of the telescope tube C69847 (fig. 35). Unscrew the locking ring A48249. Scribe a mark at the junction of the erector cell and inside of the telescope tube. Unscrew the erector and reticle assembly C56959 from the telescope tube.

g. **To Assemble the Erector with Reticle Assembly (C56959, M7, or C81006, M64, fig. 35) in the Telescope Tube.** Follow the same general procedure for assembly as for disassembly except in the reverse order. Care should be exercised that all dust and foreign objects are removed from the cell and telescope tube before assembling. Place a light coating of GREASE, lubricating, special, on the male threads of the erector and reticle cell. See that the scribed marks are correctly matched. This is highly important, otherwise the locking screws will not fit correctly and the reticle will not be positioned correctly.

h. **To Disassemble the Erector and Reticle Cell Parts.**

(1) Remove erector with reticle assembly by following the procedure given in subparagraph f, above.

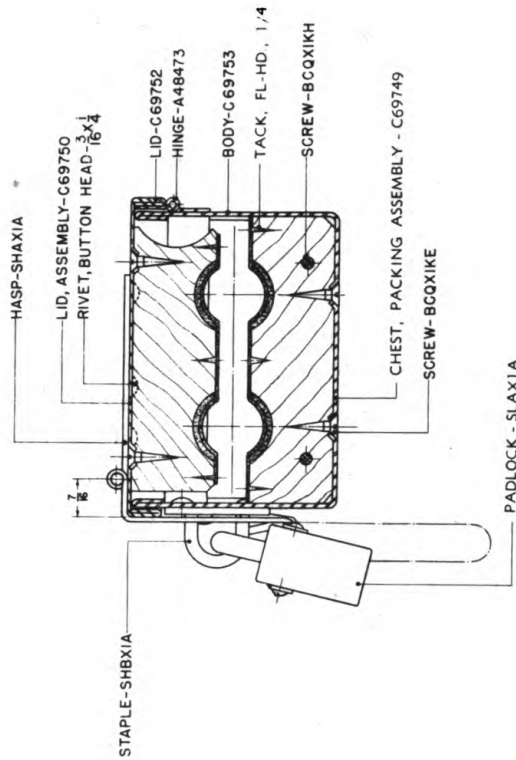
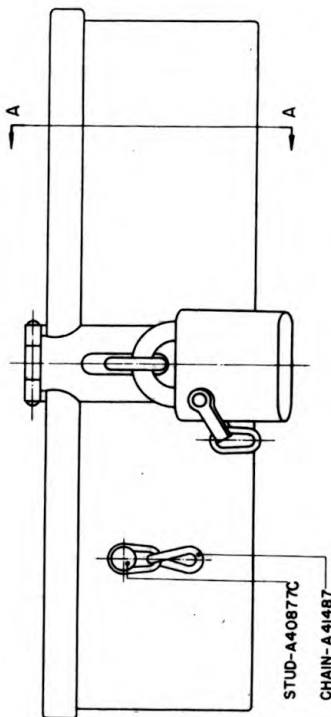
(2) Remove the flathead locking screws BCLX4BR and BCLX4BB (fig. 36). Unscrew the cell locking ring A48243. Unscrew the erector assembly B136898 (fig. 9) from the erector and reticle cell.

(3) Scribe a mark at the junction of the erector lens locking and retaining rings. Scribe another line at the junction of the cell retaining ring A48245 and erecting lens cell A48247. Unscrew the locking ring A48244 and retaining ring A48245. Follow the same procedure as given in subparagraph b (2), above, relative to riding the lens from the cells. Care should be exercised not to damage the lens. After the front erecting lens is partly exposed, grasp it on the unpolished edges and extract it from the cell. Scribe an arrow pointing toward the front of the telescope on the unpolished edge of the lens. Mark the letter "F" on this front lens. Remove the lens spacer A48246 and rear erecting lens A48236 in a similar manner. Mark this rear lens with the letter "R" and an arrow pointing towards the front of the telescope. Wrap both lens in clean PAPER, lens, tissue, and store in a safe place.

DISASSEMBLY AND ASSEMBLY

CHEST, PACKING FOR TELESCOPES.

NOTE - STENCIL LETTERING AS SHOWN ON TOP
OF LID IN WHITE $\frac{1}{2}$ HIGH.



SECTION A-A

RA PD 57049

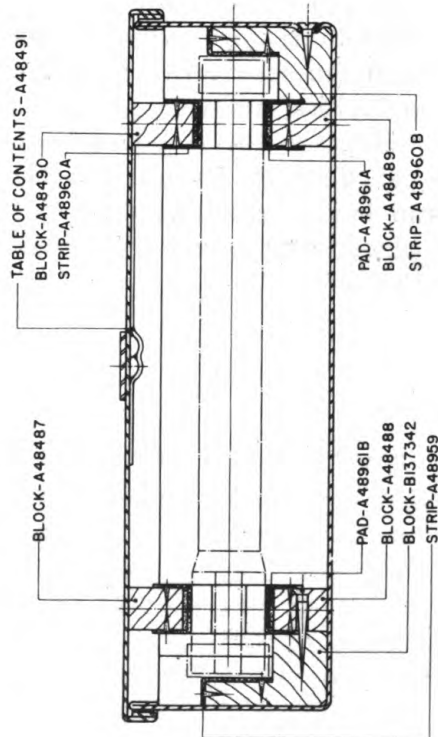


Figure 37 — Packing Chest for Telescopes

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(4) Scribe a mark at the junction of the reticle locking ring A48243 (fig. 36) and reticle retaining ring A181627. On the reticle locking ring A48243 and reticle cell, scribe a line which is a continuation of the continuous reticle line passing through the center of the reticle. Unscrew the reticle locking ring A48243 (fig. 36) and reticle retaining ring A181627. Remove the reticle from the cell by placing a clean piece of PAPER, lens, tissue on a wooden table and gently tapping the reticle cell on this tissue paper. Revolve the cell slowly as this operation continues. When the reticle is almost out of the cell, lift up about one inch from the table and tap the cell with the palm of the hand. As the reticle is partly exposed, extract it and wrap in clean PAPER, lens, tissue. Care should be exercised that the polished surfaces of reticle are not touched with the bare fingers. Always use clean PAPER, lens, tissue. After the removal of the reticle, wrap it in clean PAPER, lens, tissue.

i. To Assemble the Erector and Reticle Cell Parts.

(1) See that all dust and foreign particles are removed from the component parts. Place the rear erecting lens in the cell. Pay particular attention that this lens is not reversed. Gently tap the cell to insure correct positioning of the lens. Insert the lens spacer A48246 in the cell. Place the front erecting lens in position, paying particular attention that the lens is positioned in accordance with the markings placed thereon.

(2) Replace the retaining and locking rings in position. See that the scribed marks are properly aligned. Screw the objective cell into position in the reticle cell C56926. Replace the locking ring A48243 and the locking screws.

(3) Replace the reticle (A48018, M7, or C80936, M64) in the reticle cell C56926. Exercise particular care that the reticle is free of dust and is positioned so that the horizontal line coincides with the marks placed on the cell at disassembly. Replace the reticle retaining ring A181627 and locking ring A48243.

Section VII

ASSEMBLING THE SIGHTING SYSTEMS TO THE MATERIEL

	Paragraph
Sighting system M5	21
Sighting system M6	22

21. SIGHTING SYSTEM M5.

a. To Assemble the Sighting System to the Gun Carriage.

(1) Place the sighting system on the gun carriage. Three men are usually required for performing the operation. Two men lift the sighting system into position while the third man guides the bracket C79586 on to the special studs. Install and tighten nuts BBBX1C. Insert pin A184942 through yoke B174939 and bearing in bracket C79580. Insert cotter pin in pin A184942. The forward bracket C79580 is tack-welded to the carriage and should not be removed unless absolutely necessary.

(2) Open the telescope packing chest (fig. 37) and remove both telescopes. Place the Telescope M64 in the right telescope holder and the Telescope M7 in the left telescope holder. See that the projections on the telescope holder fit properly into the groove on the telescope. Tighten the clamping screws. Aline the telescope with the bore of the gun as explained in paragraph 16 i and j.

b. To Remove the Sighting System from the Gun Carriage.

(1) Loosen the clamps on the holders of both telescopes. Extract both telescopes from the holders and place the telescopes in the packing chest provided. Close the packing chest cover and lock.

(2) Remove the hexagonal head attaching screws from the supporting bracket assembly. Have an assistant hold the sighting system in position while these screws are being removed. Remove the two screws from the forward bracket C79580. Lift the sighting system from the gun carriage. This can best be done by two men, one man lifting on the right tube assembly and the other man lifting on the left tube assembly.

22. SIGHTING SYSTEM M6.

a. To Assemble the Sighting System to the Gun Carriage.

(1) Place the sighting system on the gun carriage. Three men are usually required for performing the operation. Two men lift and the third man guides the sighting into position. Bracket C81217 (fig. 12) is tack-welded as well as screwed to the carriage and should be removed only if bent or sprung. Insert pin A205761 through yoke B178135 and bearing of bracket C81217. Install cotter pin. Attach the brace C69726 and support C69725 to the gun carriage by the screw BCBX1EF with associated nuts and washers. Some difficulty may be experienced in alining the holes in the brace and support with

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6

the corresponding hole in the gun carriage. To overcome this difficulty, have two men hold the sighting system steady and pivot it about the forward bracket while the brace and support are correctly positioned.

(2) Place the telescopes into the respective holders as explained in paragraph 21 a (2). Aline the telescopes with the bore of the gun as explained in paragraph 16 i and j.

(3) If the sighting system is not to be used immediately, place the front cover support assembly C78058 (fig. 12) in position on the sighting system, and lock with the pins provided. Place the rear cover support assembly C82269 in position; lock and place the canvas cover on these supports.

b. To Remove the Sighting System from the Gun Carriage.

(1) Remove the canvas cover from the cover supports. Remove the locking pins from the front and rear cover support assemblies. Remove both cover support assemblies.

(2) Have two men balance the sighting system, while a third man removes all the attaching screws. Also remove the cotter pin and drift out pin A205761 from the yoke and bearing in the forward bracket. Lift the sighting system from the gun carriage.

Section VIII

PACKING, STORAGE, AND SHIPMENT

Packing, storage, and shipment	Paragraph 23
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23. PACKING, STORAGE, AND SHIPMENT.

- a. This information is not available now but it will be included in a revision of this manual.

ORDNANCE MAINTENANCE — SIGHTING SYSTEMS M5 AND M6

Section IX

REFERENCES

	Paragraph
Standard nomenclature lists	24
Explanatory publications	25

24. STANDARD NOMENCLATURE LISTS.

Cleaning, preserving and lubricating materials; re-coil fluids, special oils, and miscellaneous related items	SNL K-1
Kit, repair, instrument, M4	SNL F-206
System, sighting, M2 (for 37-mm A.A. gun carriage M3); system, sighting, M2A1 (for 37-mm A.A. gun carriage M3A2); telescope, M7 (for sighting systems M2, M2A1, M5, and M6); telescope, M64 (for sighting systems M5 and M6)	SNL F-183
System, sighting, M5 (for 37-mm A.A. gun carriage M3A1); system, sighting, M6 (for 37-mm A.A. gun on multiple gun motor carriage M15)	SNL F-241
Truck, 2½-ton, 6 x 6, instrument bench, M23	G-178
Truck, 2½-ton, 6 x 6, instrument repair, M10 and M10A1	G-141
Truck, instrument repair, M1	SNL G-92
Current Standard Nomenclature Lists are as tabulated here. An up-to-date list of SNL's is maintained as "Ordnance Publications for Supply Index"	OPSI

25. EXPLANATORY PUBLICATIONS.

Cleaning, preserving, lubricating, and welding materials and similar items issued by the Ordnance Department	TM 9-850
Field inspection of ordnance materiel by service command inspectors in continental U. S.	TB 1100-1
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BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

J. A. ULIO,
*Major General,
The Adjutant General.*

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(For explanation of symbols, see FM 21-6)

